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Portland Cement Plants-Background Information for Promulgated Revisions to Standards

(U.S.) Environmental Protection Agency
Research Triangle Park, NC

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16. ABSTRACT

Revisions to the monitoring, recordkeeping, and reporting requirements associated with standards of performance for portland cement plants (40 CFR 60.60) were proposed in the Federal Register on September 10, 1985 (50 FR 36956). These requirements are being promulgated under the authority of Section 114 of the Clean Air Act. This document contains a summary of the comments on the proposed revisions to the standards, the Agency's response to the comments, and a summary of the changes to the revised standards since proposal.

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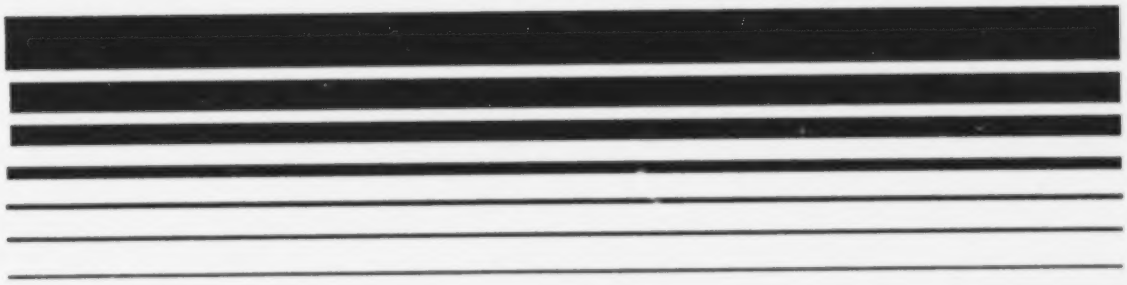

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PORTLAND CEMENT--
BACKGROUND INFORMATION FOR PROMULGATED REVISIONS TO STANDARDS

Emission Standards Division

U. S. Environmental Protection Agency
Office of Air and Radiation
Office of Air Quality Planning and Standards
Research Triangle Park, North Caroina 27711

July 1988

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1. SUMMARY

New source performance standards (NSPS) for the portland cement industry were proposed by EPA on August 17, 1971 (36 FR 15704), promulgated on December 23, 1971 (36 FR 24876), and revised in response to a court remand on November 12, 1974 (39 FR 39872). As required by Section 111(b)(1)(B) of the Clean Air Act, the standards were reviewed in 1979. No revisions to the standard were made as a result of that review (44 FR 60761), although it was recommended that the use of continuous opacity monitoring systems (COMS's) be required. In 1983, EPA undertook a second review of the standards of performance for portland cement plants. During this review, it was found that improper operation and maintenance of control equipment is a significant cause of excess emission episodes in the portland cement industry. It was also found that kilns controlled by electrostatic precipitators (ESP's) deenergize the precipitator during periods of carbon monoxide trips, and particulate matter emissions are exhausted uncontrolled to the atmosphere. As a result of these findings, it was proposed that COMS's be installed on all kilns, clinker coolers, and alkali bypass control device stacks for facilities subject to the NSPS. It was also proposed that all plants subject to the NSPS submit semiannual malfunction reports on the frequency, duration, and cause of all episodes leading to the bypass or deenergization of any device controlling kiln emissions.

The amendments to the regulation were proposed on September 10, 1985 (50 FR 36956), with a request for public comment. A public hearing was held on October 25, 1985, and four speakers representing three portland cement companies and two trade associations presented comments on the proposed amendments. A total of 18 letters were received from commenters representing industry, trade associations, and State and local air

pollution control agencies. Their comments and EPA's responses are summarized in Chapter 2 of this document. The summary of comments and responses serves as the basis for the revisions that have been made to the NSPS for portland cement plants between proposal and promulgation.

1.1 SUMMARY OF CHANGES SINCE PROPOSAL

In response to the public comments and as a result of EPA reevaluation, certain changes have been made in the proposed amendments prior to promulgation.

As a result of reevaluation, the COMS excess emission reporting frequency has been changed from quarterly to semiannually in this regulation. Also, the separate requirement to submit semiannual reports on the frequency, duration, and cause of any episodes leading to bypass or deenergization of any device controlling kiln emissions has been deleted for sources using a COMS. The EPA has determined that this information can be obtained from the semiannual excess emission reports. However, those sources that do not install a COMS would be required to submit semiannual reports on the frequency, duration, and cause of any incident leading to bypass or deenergization of the kiln control device.

The regulation has been revised to allow owners or operators of existing and new, multiple-stack, positive- or negative-pressure fabric filters or ESP's the option of performing Method 9 observations daily in lieu of installing COMS's. The EPA has determined that multiple-stack control devices may have some economic and environmental advantages compared to single-stack control devices, and, therefore, EPA does not want to preclude the use of multiple-stack control devices or require installation of multiple COMS's. Multiple-stack ESP's have been included as control devices that may be monitored by Reference Method 9 observations in lieu of installing COMS's because one company informed the Agency that it uses multiple-stack ESP's at one of its facilities. Fabric filters or ESP's that exhaust gases through a monovent must be monitored by certified visible emission observers rather than monitoring with a COMS.

Section 60.63(c) has been revised to clarify that where visible emissions are observed for a number of emission sites on either multiple-

stack fabric filters or ESP's, Method 9 observations must be made for the emission site with the highest opacity.

For clarification, definitions of "bypass," "bypass stack," and "monovent" have been added to the regulation.

2. SUMMARY OF PUBLIC COMMENTS

A total of 18 letters commenting on the proposed standard and the background information document for the proposed amendments were received. Comments from the public hearing on the proposed amendments were recorded, and a transcript of the hearing was placed in the project docket. A list of commenters, their affiliations, and the EPA docket number assigned to their correspondence is given in Table 2-1.

For the purpose of orderly presentation, the comments have been categorized under the following topics:

2-1. General;

2-2. Costs and Economic Impact;

2-3. Environmental Impact;

2-4. Selection of Emission Limits;

2-5. Legal Considerations;

2-6. Testing and Monitoring;

2-7. Reporting and Recordkeeping; and

2-8. Wording of Regulation.

The comments and EPA's responses are presented in the following sections of this chapter. The docket reference is indicated in parentheses in each comment.

2.1 GENERAL

2.1.1 Comment: One commenter (IV-D-1) questions the source and reliability of the EPA-sponsored study on excess visible emissions from 16 source categories that included portland cement plants. The commenter contends that the study cited in the preamble by EPA is probably an unpublished report that received no critical review. In addition, the

TABLE 2-1. LIST OF COMMENTERS ON THE PROPOSED AMENDMENTS TO THE STANDARDS OF PERFORMANCE FOR PORTLAND CEMENT PLANTS

Docket entry No.[a]	Commenter/affiliation
IV-D-1	R. F. Gebhardt Lehigh Portland Cement Company 718 Hamilton Mall Allentown, Pennsylvania 18105
IV-D-2	R. H. Berby Kaiser Cement Corporation 300 Lakeside Drive Oakland, California 94612
IV-D-3	E. F. Young, Jr. American Iron and Steel Institute 1000 16th Street, N.W. Washington, D.C. 20036
IV-D-4	J. K. Hambright Pennsylvania Bureau of Air Quality Control 200 N. Third Street Harrisburg, Pennsylvania 17120
IV-D-5	D. S. Cahn CalMat Company 9300 Flair Drive El Monte, California 91734-1210
IV-D-6	R. F. Gebhardt Lehigh Portland Cement Company 718 Hamilton Mall Allentown, Pennsylvania 18105
IV-D-7[b]	R. W. Crolius Portland Cement Association Suite 520 1620 I Street, N.W. Washington, D.C. 20006
IV-D-8	J. A. Paul Regional Air Pollution Control Agency Post Office Box 972 Dayton, Ohio 45422

(continued)

TABLE 2-1. (continued)

Docket entry No.[a]	Commenter/affiliation
IV-D-9	D. Y. MacIver Southwestern Portland Cement Company Post Office Box 937 Victorville, California 92392
IV-D-10	F. W. Cohrs Moore McCormack Cement, Inc. 605 West Broad Street Brooksville, Florida 33512
IV-D-11	J. A. Overton, Jr. American Mining Congress Suite 800 1920 N. Street, N.W. Washington, D.C. 20036
IV-D-12	W. L. Greer Lone Star Industries, Inc. 515 West Greens Road, Suite 400 Houston, Texas 77067
IV-D-13[b]	R. W. Crolius Portland Cement Association Suite 520 1620 I Street, N.W. Washington, D.C. 20006
IV-D-14	J. Willenberg State of Washington Department of Ecology 4530 150th Avenue N.E. Redmond, Washington 98052-5301
IV-D-15	J. S. Geier Air Pollution Control Division Colorado Department of Health 4210 East 11th Avenue Denver, Colorado 80220
IV-D-16	W. H. Wulf, Jr. The Monarch Cement Company Humboldt, Kansas 66748

(continued)

TABLE 2-1. (continued)

Docket entry No.[a]	Commenter/affiliation
IV-D-17	J. F. Chadbourne General Portland, Inc. 12700 Park Central Place Suite 2100 Dallas, Texas 75221
IV-D-18	E. J. Price National Gypsum Company--Cement Division Post Office Box 887 Southfield, Michigan 48037
IV-D-19	J. Francis Department of Environmental Control State of Nebraska Post Office Box 94877 Lincoln, Nebraska 68509-4877
IV-F-1	Transcript of Public Hearing, Speakers were: Walter Greer, Lone Star Industries, Inc. Robert Crolius, Portland Cement Association Douglas MacIver, American Mining Congress and Southwestern Portland Cement Company David Cahn, CalMat Company

[a]These designations represent docket entry numbers for Docket No. A-84-08; these documents are available for public inspection at: U. S. Environmental Protection Agency, Central Docket Section, West Tower Lobby, Gallery 1, Waterside Mall, 401 M Street, Washington, D.C. 20460.
[b]This comment letter was inadvertently entered into the docket twice (IV-D-7 and IV-D-13).

commenter presents the following information that appears to be inconsistent with the EPA-sponsored study:

1. The study claimed that the kilns investigated had uncontrolled emission rates ranging from 721 to 182,000 megagrams (Mg) per year. The AP-42 emission factors for kilns are about 12 percent of the production rate. It is estimated that the kiln with uncontrolled emissions of 721 Mg would only produce 7,000 tons of product per year, but because no kilns that small have been operated for years, the source and reliability of the data are questioned.

2. It is claimed in the same document that excess emissions from rotary kilns are 38 tons per year. The background information document claims that there are 135 clinker producing plants. If both claims are true, the average "excess emissions" per plant is only 563 pounds. (The commenter requests that the term "excess emissions" be defined.) However, if it is assumed that the 38 tons of "excess emissions" is per kiln and that the average uncontrolled emissions are 56,000 tons (10 percent of product), emissions would be 0.068 percent, which represents a control efficiency of 99.93 percent. This is equivalent to less than 0.1 pound per ton or 0.004 percent of feed, and control efficiency would be better than 99.995 percent.

Response: The report cited (Docket Item II-A-4) is entitled "Characterization of Air Pollution Control Equipment Operation and Maintenance Problems," dated February 1981. This is a published report and is available through the National Technical Information Service (NTIS No. 83189985); it does not have an assigned EPA document number. This study was sponsored by EPA in conjunction with the Council on Environmental Quality (CEQ) and involved six State and three local air pollution control agencies. The data were gathered by comprehensive on-site inspections at seven cement manufacturing plants, which included the collection of operating and maintenance data for nine rotary kilns. Four contractors were involved in the initial source inspections. In accordance with EPA policy, the results of these source inspections were reviewed by the specific plants and by EPA and CEQ. This report summarizing the results was subsequently reviewed and approved for publication by the EPA Office of Policy, Planning, and Evaluation.

In order to ensure the cooperation of the participating sources, it was necessary to maintain their anonymity throughout the study. In response to this comment, it has been determined that the actual cement production rate at this plant is 300,000 tons per year, not 7,000 tons per year. The 721 Mg of particulate matter per year cited in the report is an estimate based on the average controlled emission rate obtained from stack test data. Also, the plant may not have been operating at full capacity during the investigation. In addition, the AP-42 emission rate represents an average of data obtained from 9 dry-process kilns and 13 wet-process kilns. The uncontrolled emission rate at these plants actually ranged from 1 to 25 percent of the production rate for dry-process kilns and 1 to 33 percent of the production rate for wet-process kilns. The EPA-sponsored study was based on actual data from seven cement plants, and the Administrator has no reason to doubt the reliability of the data and results.

As defined in the report, "excess emissions" is the absolute quantity of a given pollutant emitted to the atmosphere in excess of a defined regulatory limit. The 38 tons of "excess emissions" per year referred to is on a per kiln basis. If the average uncontrolled emissions are 56,000 tons per year as assumed by the commenter and the design efficiency of the control device is 99.9 percent, 56 tons of particulate matter would be released uncontrolled into the atmosphere. This amount combined with 38 tons of excess emissions per year results in an increase of 68 percent for a total of 90 tons of uncontrolled particulate matter per kiln per year. This is equivalent to a control device efficiency of 99.8 percent or 0.118 pound of particulate matter per ton feed (dry process).

2.1.2 Comment: After the last public hearing speaker (IV-F-1) had concluded his oral presentation, Mr. Jerry Winberry, a company representative in the audience, noted that throughout the proceedings no cement industry representatives questioned the opacity standard. He asked whether the commenter or individual plants were concerned about detached plume problems and whether the issue had been considered during the review of the standards. He noted that the issue had been addressed in the background information document and that no one had responded to those findings.

In response to this question from Mr. Winberry, the hearing speaker (IV-F-1) stated that it was a problem but that his company very seldom has detached plumes; it is a phenomenon related to ammonium compounds in the exhaust gases when specialty clinker is produced. Also, the phenomenon appeared to be more common with wet kilns; his company has dry kilns and, therefore, it is not a big problem. He added that continuous opacity monitors (COM's) do not detect detached plumes.

Response: The 4-year review of the NSPS revealed that 27 out of 30 kilns that have become subject to the NSPS since the last review are in compliance with the particulate mass emission limit and the 20 percent visible emission limit; 3 of the 30 kilns are not yet operational. Several plants have had problems with detached plumes; however, no single cause appears to be responsible for their occurrence. Two plants (one wet and one dry process) have corrected detached plume problems caused by kerogen (a bituminous material) in the limestone feed material. Another plant had detached plumes on its two oil-fired wet process kilns. The plant now operates one coal-fired dry process kiln and has had no further problems with detached plumes. Another plant with a detached plume problem is in compliance with the mass standard and in continuous compliance with the opacity standard as determined by a transmissometer. However, after much testing, the cause of the detached plume at this plant is still unknown. Detached plumes have been studied extensively at several facilities by the industry and EPA (Docket Items I-D-48, I-I-17, I-I-22, II-A-3). The raw materials, the feed, the blasting explosives used in mining, and the ambient temperature are potential contributing factors. In general, detached plumes do not prevent plants from meeting the opacity standard. If a detached plume is formed after the COMS and the plume violates the opacity standard, the Agency has determined that the situation should be evaluated on a case-by-case basis by the appropriate enforcing agency to determine the cause of the detached plume and to initiate corrective action. The source owner or operator may petition the Administrator for an adjusted opacity standard as provided in 40 CFR 60.11(e).

2.2 COSTS AND ECONOMIC IMPACT

2.2.1 Comment: Several commenters (IV-F-1; IV-D-1; IV-D-11; IV-D-12; IV-D-18) were opposed to the installation of COMS's because they believe that the cost of COMS's presented by EPA is too low. [EPA estimated that the capital cost of purchasing and installing a COMS would be about $31,500.] Several different cost estimates given by the commenters for the purchase and installation of a COMS ranged as follows: $50,000 to $60,000 per COMS (including calibration) plus the cost to install platforms and ladders; $60,000 per COMS plus the cost of recordkeeping and reporting; $65,000 per COMS; $70,000 per COMS; and $80,000 per COMS.

The commenters believe that the installation cost of a COMS will vary from plant to plant; the cost may be $60,000 at one plant and as much as $1.5 million at another plant. The commenters gave the following reasons why they believe the cost will vary and, as a result, why EPA's estimate is too low:

1. The EPA has underestimated ancillary costs such as those for tools for calibration and repair. A more realistic estimate for COMS installation should include costs for engineering, the COM, a recorder, an alignment tool, materials, labor, certification, contingencies, and the cost associated with bringing access ladders up to safety standards;

2. The EPA did not consider the substantial costs of constructing access to and platforms on installation sites that, in many cases, could surpass hardware costs; and

3. Costs for older plants may be substantially higher than for new plants because of limited accessibility of the stacks.

Response: In response to these comments, EPA requested additional information from seven plants that have already installed COMS's, generally in response to State or local requirements. Five responses for six COMS installations were received (see entries in Docket Category IV-D). The information request sent to the respondents specifically asked for cost information on tools for calibration and repair, engineering, a recorder, certification, contingencies, etc. Table 2-2 presents a summary of the capital and annual COMS costs reported for the six installations. For comparison, all cost data were updated to

TABLE 2-2. CONTINUOUS OPACITY MONITORING SYSTEM CAPITAL AND ANNUAL COSTS (1984 Dollars)

Plant	Plant A (retrofit/ non-NSPS)	Plant B (retrofit/ non-NSPS)	Plant C (retrofit/ NSPS)	Plant D (retrofit/ NSPS)	Plant E (new/NSPS)	Plant D (new/NSPS)	EPA proposal estimate
Capital costs, $							
COMS and equipment cost	19,128	27,274	18,488	21,782	55,179[a]	21,632	22,000
Installation cost	36,340	8,648[b]	13,150	10,055	657,856[c]	10,055	} 9,500
Certification cost	1,500	0[d]	5,142	NA	1,500	NA	
Total, $	56,968	35,922[e]	36,780	31,837[f]	714,535[g]	31,687[f]	31,500
Annual costs, $							
Utilities and operating labor	2,028	2,260	NA[h]	885	680	885	4,514
Maintenance	500	4,503	1,450	2,213[i]	4,600	429	1,047
Capital recovery	9,271[j]	5,850[b]	5,988[j]	5,181[j]	107,068[j]	5,157[j]	5,127
Total, $	11,799	12,613[e]	7,438[k]	8,279	112,348[g]	6,471	10,688

NA = not available.
[a]The cost reported by the plant is for a combination opacity, SO_2, NO, and CO_2 monitor. The vendor reports that the cost for just the opacity monitor would be approximately $18,000 (1985 dollars).
[b]Cost underestimated because the entire cost of wiring and conduit could not be determined.
[c]The COMS was installed during construction and was included in the installation cost of the stack. Labor cost of $40,000 was included in the response, but it included building a 5 ft x 10 ft structure around the monitor.
[d]The COMS has not been certified, and there are no plans to have it certified.
[e]Total cost underestimated because installation cost was underestimated.
[f]This is the estimated cost in 1985 dollars for COMS installation on their clinker coolers based on their experience installing COMS's on their kilns.
[g]Cost overestimated because this includes cost of installing the stack.
[h]Utilities and labor for just the COMS could not be determined.
[i]There is no access or platform installed. A high lift truck is used to reach the CEM (21 feet above grade) for maintenance. This cost includes the amount a plant would have to spend to rent a high lift truck if it did not already have one.
[j]A capital recovery charge was calculated (16.275 percent of capital costs) to allow comparison with EPA and Plant B costs. Overhead was not included in Plant B costs.
[k]Total cost underestimated because utilities and labor cost could not be determined.

1984 dollars. The kilns at Plants C, D, and E are subject to the NSPS; Plants A and B are subject to State requirements only. The COMS's on four of the kilns at the plants surveyed were installed on existing stacks, while the COMS's on two of the kilns were installed during its construction.

The cost for a COMS and associated equipment ranged from $18,000 to $27,000. Plant E reported a cost of $55,200, but this was for a combination opacity, SO_2, NO_x, and CO_2 monitor. The vendor of the $55,200 combination monitor was contacted, and he reported that the cost for just an opacity monitor at Plant E would be about $18,000 (Docket Item IV-E-60). These costs are consistent with EPA's previously estimated cost of $22,000.

At Plant A, which is not subject to the NSPS, a new platform and access had to be installed because the existing platform and access were not in a location suitable for COMS installation. The installation and certification cost of the COMS was $37,800. The largest cost components at this plant were the costs for purchasing a transformer and for the labor to install the COMS, platform, and access. The costs at this plant have been determined to be unusually high because if this kiln were subject to the NSPS, the platform and access would have been in a location suitable for stack testing and, thus, for COMS installation and would not have required rebuilding. Also, the installation cost of the COMS is unusually high because if the kiln had been subject to the NSPS, the proper voltage and amperage would have been available to perform EPA Method 5 during compliance testing. Thus, for these reasons, EPA believes that the COMS installation costs at this plant are not representative of the COMS installation costs for a plant subject to the NSPS. At Plant B, the existing platform and access were used, and the total installation cost was about $8,600.

At Plant C, the existing stack testing platform and access were used with modifications at a reported installation and certification cost of $18,300. At Plant D, the existing stack testing platform and access were used for one kiln, and the plant estimated the installation cost in 1985 dollars at $10,100. At this facility, the 1985 capital and installation costs provided were the plant's estimated and budgeted costs to install

COMS's on its clinker coolers based on its experience and the costs of installing COMS's on its kilns. Thus, for Plants A, B, C, and D, COMS installation costs for existing kilns, including certification costs where available, ranged from $8,600 to $37,800. The EPA had estimated a total installation cost of $9,500 including operator training and certification, which is at the lower end of the costs reported by the four facilities. The high estimate, $37,800, includes the costs for installation of a new platform and access and for a transformer. However, as discussed previously, this cost would not be typical for a plant subject to the NSPS and, excluding the $37,800 estimate, the COMS installation and certification costs range from $8,600 to $18,300.

Plant E provided cost information for a COMS installed on the kiln stack during construction of the kiln. Because all of the construction was done at once, the plant was not able to determine the cost for installing only the COMS. The reported installation and certification cost of $659,400 includes the cost of the stack and $40,000 for purchasing the COMS. The cost of the COMS is overstated because it is for a combined opacity, SO_2, NO_x, and CO_2 monitor. The platform and access and the majority of the costs for engineering and supervision activities would have been required for performance testing, and, thus, the associated costs are not directly attributable to the COMS. Therefore, it is not possible to make a comparison between this plant's installation cost and EPA's estimated installation cost.

One of the plants that installed a COMS on its existing kiln also installed a COMS on another kiln during construction of that kiln and estimated that the installation cost, $10,000, was about the same in both cases.

In conclusion, these responses show that capital and installation costs are site-specific and the installation costs are generally higher than costs previously estimated by EPA. The total capital and installation costs of COMS's ranged from $31,700 to $57,000 compared to EPA's previous estimate of $31,500. However, for the reasons stated previously, it has been determined that the higher cost of $57,000 is not representative of COMS capital and installation costs at plants subject to the NSPS because the plant not subject to the NSPS had to install a new

platform and access. Thus, based on these responses, EPA has reevaluated the COMS capital and installation costs and increased the estimate from $31,500 to a range of $32,000 to $40,000. However, EPA does not believe that even the higher cost of $40,000 will result in an unreasonable burden on the plants.

The EPA does not consider it appropriate to include the cost of contructing an access and a platform because these items should have already been installed in order to perform stack testing to determine compliance with the mass emission standard as required under 40 CFR 60.8. In fact, at Plants C and D, which are subject to the NSPS and which installed COMS's on the existing stacks, the existing platforms and accesses were used. Plant B, which is not subject to the NSPS, was also able to use the existing platform and access. At Plant C, the platform required slight modifications to widen the platform and strengthen the handrails, and the installation cost was $13,150. Plant A was the only plant responding to this survey that was unable to use the existing platform and access, and this plant is not subject to the NSPS. This plant did not have the platform and access in a suitable location for compliance testing and, thus, for COMS installation.

Certification costs reported were $1,500 at two plants and $5,000 at another plant. The EPA has included the cost of certification with an installation cost of $9,500. All the COMS's that were required to be certified passed the certification test on the first attempt. One plant was not required to certify its COMS. The $5,000 cost seems high, and further contact with this plant provided no information on the possible reason. However, the total capital cost at this plant was $36,000, which includes the certification cost, and this total is consistent with the capital cost range of $32,800 to 40,000 that represents EPA's revised estimate.

The EPA does not believe that COMS installation costs will be substantially higher for older plants with limited accessibility than for new plants because all plants subject to the NSPS should have installed and maintained an access for compliance stack testing. At one plant responding to the survey, the kiln was installed in 1963, and the COMS was installed in 1984; however, the COMS installation cost of $8,600 was

comparable to the other cost estimates. At another plant, the platform was widened and the handrails were strengthened when the COMS was installed 3 years after construction of the kiln. The costs of these modifications and installation of the COMS totaled approximately $13,150, which is also comparable to the other cost estimates.

2.2.2 Comment: Several commenters (IV-F-1; IV-D-11; IV-D-12; IV-D-18) were also concerned that the annualized cost presented by EPA is too low. [EPA estimated that the annualized cost of a COMS would be about $10,700.] The various cost estimates ranged as follows: $12,500 per COMS; $20,000 per COMS; $21,041 per COMS; and $45,000 to $65,000 per plant, assuming two or three COMS's per kiln.

The commenters gave the following reasons why they believe EPA's annualized cost estimate is too low:

1. The estimate of 22 hours of labor for maintenance seems low and assumes few, if any, breakdowns; and

2. The annualized cost would also reflect the higher cost for installation as discussed above.

Response: The annual costs for utilities, operating labor, maintenance, and capital charges reported by four plants ranged from $6,500 to $12,600 compared to EPA's previous estimate of $10,700. As shown in Table 2-2, these figures include a capital recovery charge (16.275 percent of capital costs) that has been added to the annual costs reported by Plants A, C, and D to allow comparison with those costs reported by Plant B, which included capital recovery charges. The annual cost for Plant E was not included in the range because the capital recovery factor includes the cost of installing the stack, but the other components of the annual costs for Plant E were within the range of costs reported by the other plants.

The respondents indicated very little maintenance is required for their COMS's. Normal activities performed weekly to monthly include checking the calibration and cleaning the lens and filter. The number of malfunctions/breakdowns of the COMS was also low and ranged from zero to three incidents per year. No estimates for maintenance labor hours were submitted. Although the required maintenance activities are limited, the reported costs were $400 to $4,600 per year. The EPA had previously

estimated the cost of maintenance at $1,000. Although some of the reported maintenance costs were higher than EPA's estimate, the reported utilities and operating costs were lower than those estimated by EPA. Thus, the total annual costs reported by industry are consistent with the EPA estimate. Because of EPA's decision to increase the estimated range of capital costs to $32,000 to $40,000, the annual cost estimate has been increased to reflect the capital recovery charge ($6,510) associated with the $40,000 capital cost. Thus, it is estimated that the annual cost for COMS's would be approximately $12,800 (Docket Item IV-B-4). This results in a maximum increase in total annual control costs of 3.8 percent, which is still considered reasonable.

In most cases only one COMS will be required per kiln. However, in cases where a separate bypass stack is installed through which emissions are sometimes vented to the atmosphere, a COMS will be required on the bypass stack in addition to the main control device stack. No situations have been identified where more than two COMS's will be required per kiln as suggested by one of the commenters.

Of the 64 plants subject to the NSPS, 5 plants may be required to install 4 COMS's each, the most that any plant would be required to install. Assuming the estimated annual cost of $12,800 per COMS, the total annual cost at each of these five plants will be $51,200. Thus, the $45,000 to $65,000 mentioned by one of the commenters is likely to be incurred only by those five plants; costs for the remaining 59 plants will be substantially lower.

2.2.3 Comment: A portland cement company (IV-D-6) contracted with an independent engineering firm to estimate the capital cost of installing one COMS. The engineering firm estimated the cost at $125,000, which includes a self-supporting stair tower around the existing stack and a new platform. The existing platforms and ladders would be removed. The cost for a self-supporting stair tower with access walkway and a new platform would be $130,000 with the existing ladder and platform left intact. The commenter emphasized that the capital cost of an opacity monitor must also include certain installation costs in addition to the cost of the monitor itself, and almost all kilns subject to the NSPS will require two or three opacity monitors. The commenter states that it is probable that not even

one pound of additional particulate matter will be collected as a result of a COMS; therefore, the cost effectiveness is "astronomical."

Response: The Agency has reviewed the cost estimates provided by the independent engineering firm and has determined that the capital cost estimates of $125,000 to $130,000 for installation of a COMS are overstated. The EPA does not agree that it is necessary to build a new platform and staircase at this plant. The type of staircase costed is unnecessarily expensive for its intended purpose. The EPA has evaluated these costs and determined that if the costs of building the stairs and platforms and the associated engineering costs are excluded, the resulting capital cost is about $33,500 including installation, which is consistent with the range of costs ($32,000 to $40,000) estimated by EPA and supported by responses from the plant survey (Docket Item IV-B-4).

As discussed in the previous response, EPA has determined that at the most only two COMS's per kiln will be required, one for the main kiln control device stack and, if necessary, one for the separate control device stack on the alkali bypass.

It is not the purpose of COM's in themselves to reduce emissions. As mentioned in the response to Comment 2.1.8., the EPA-sponsored study determined that excess emissions are caused primarily by operation and maintenance problems. Thus, the use of COMS's to ensure proper operation and maintenance of control equipment, as would be required by the promulgated amendments, is appropriate.

2.2.4 Comment: One commenter (IV-D-1) stated that the EPA-proposed requirement to retrofit COMS's would require the installation of COMS's on equipment that has been in service for up to 15 years and that was not designed for opacity monitors or the frequent traffic required for their maintenance. The commenter does not believe that existing ports and platforms could be used to mount COMS's because they must be available for mass emissions testing, the platforms are narrow, and they are normally accessible only by an exposed vertical ladder. Another commenter (IV-F-1; IV-D-5) noted that many stacks have ladders that are not in compliance with OSHA regulations, and, thus, replacement would be required. Guard rails, platforms, transformers, electric wiring, and conduits would be needed on the stack, especially on older stacks.

The first commenter states that at the minimum, the existing platform would have to be widened and reinforced at an estimated cost of $10,000 to $20,000 for a short steel stack and more for a tall steel, concrete, or masonry stack. If replacing the stack is required, the cost would be about $100,000 including the platform. In addition, safe access to the platform would be required to allow for frequent servicing and repair of the COMS. The commenter estimates that the cost of the access structure would be $200,000 for either a free-standing structure or replacement of the existing stack with a short steel stack designed to support all-weather access, the access itself, and new platforms. Consequently, the cost to retrofit a stack would be $270,000, with a total cost per kiln of $540,000 to $810,000 (assuming at least two or three monitors would be required per kiln). The commenter believes that an expenditure this great is clearly excessive even if one assumes that it would result in collection of the maximum of 38 tons of particulate matter per year as claimed by EPA.

The second commenter estimated an "almost worst-case" capital cost of $101,070 including the COMS ($22,000), transportation and taxes ($2,462), certification ($4,500 if they pass the first time), platform installation, contingencies, and engineering supervision. This cost does not involve replacing the entire stack in cases where it would not hold the extra weight or where the stack would vibrate too much because of the fan. Averaging this figure ($101,070) and the cost presented in the preamble ($31,500) equals $65,000, which, when multiplied by 100 COMS's, yields an industry wide cost of $6.5 million. The commenter believes this amount is excessive and unwarranted in view of the minimal reduction in particulate emissions that might result.

Response: The Agency has reviewed the cost estimates provided by the commenters and has determined that the capital cost estimates of $101,079 and $270,000 for installation of a COMS are overstated. The EPA does not agree that it is necessary to build a new platform and staircase because these items should have been installed to conduct the performance test to determine compliance with the standard. Several of the plants surveyed did not have any problems using the existing platform and access for the installation of COMS's. At one plant (10 years old), the platform was

widened and handrails strengthened at a cost of approximately $13,150 including installation of the COMS. At one plant that is not subject to the NSPS and that installed a new platform and access, the total installation cost was only $36,300, which would not result in an unreasonable burden.

Existing stacks must be equipped with a platform, access, and testing ports to allow for compliance testing as required by 40 CFR 60.8:

> (e) The owner or operator of an affected facility shall provide, or cause to be provided, performance testing facilities as follows:
> (1) Sampling ports adequate for test methods applicable to such facility.
> (2) Safe sampling platform(s).
> (3) Safe access to sampling platform(s).
> (4) Utilities for sampling and testing equipment.

As previously discussed in the response to Comment 2.2.1, the existing platform and access should be adequate as is, or with only minor modifications, to accept the installation of a COMS. Therefore, the Agency believes that replacement of an existing stack would not be required. In addition, as stated previously, at the most only two COMS's would be required per kiln or four COMS's per plant, for a total cost of $160,000 per plant, which EPA has determined to be reasonable in view of information to be obtained by the monitors that will help ensure proper operation and maintenance of control equipment.

The cost of conduit reported by the second commenter is overstated at $65 per foot. If the costs to install the platform and stairs are excluded and the cost of conduit is estimated at $6 per foot (Richardson Engineering Services, Docket Item IV-J-6), the resulting capital cost is about $36,500, which is consistent with EPA's revised estimate of $32,000 to $40,000 and with costs reported by the five plants discussed in the response to Comment 2.2.1.

The EPA has determined that for the 118 kilns, clinker coolers, and alkali bypass stacks at the 64 plants subject to the NSPS, more than 29 COMS's have been installed, in most cases in response to State requirements. Using EPA's higher estimated capital and installation cost of $40,000 and multiplying by the 89 COMS's projected to be installed

results in an industry wide cost of approximately $3.6 million. The EPA does not believe this estimated industry wide cost is excessive.

2.2.5 Comment: One commenter (IV-F-1) states that substitution of a certified visible emissions observer instead of a COMS to determine the opacity of visible emissions from certain types of fabric filters would be more expensive than EPA anticipates. One company foresees a need for two, full-time, trained employees at a cost of approximately $80,000 per year. It was suggested that industry resources could be better used for maintenance and enhancement of existing control systems rather than for complying with unnecessary and unwarranted new requirements. Another commenter (IV-D-11) noted that the costs of visual observations are understated due to the costs to train, certify, and employ qualified personnel.

Response: The EPA has estimated that a company would need to train two employees to read visible emissions at a cost of $1,949, including fees, mileage, per diem, hotel, and wages (Docket Item II-B-9). However, two plants surveyed by EPA reported that their costs to train observers only ranged from $50 to $300 dollars. In addition, EPA believes that only one person would be required to perform visible observations for a short period each day and that the remainder of the reader's day would be used to perform other tasks. The EPA estimates the time required to take three 6-minute readings and reduce the data would be about 40 minutes per day at an annual cost of $6,821. The two plants responding to this question in the survey estimated 1 hour would be required, and one plant estimated an annual cost of $4,400. The EPA has concluded that its estimated costs of visual observations are still appropriate; in fact, the cost may be overstated. Therefore, EPA does not believe the requirement to read visible emissions using certified observers will result in an unreasonable burden on personnel, time, or financial resources.

2.2.6 Comment: One commenter (IV-F-1) estimates that his company would need five certified readers and a production foreman to read visible emissions on open-top baghouses on a daily basis. One plant has a baghouse with 20 compartments and an open vent at the top. Reading the opacity of emissions coming from every compartment, including those with an opacity of less than 20 percent, would require a lot of time. The

commenter's company cannot afford to hire additional personnel for visible emissions reading because of economic difficulties.

Response: It will not be necessary to read emissions from every single compartment of a multiple-stack control device. The regulation has been revised to require that visible emission observations be recorded only for the emission site with the highest opacity. Thus, in most cases, the time to perform observations should not exceed 40 to 60 minutes per day. Also, the Method 9 alternative for multiple-stack control devices is expected to be used infrequently. Only one certified reader at each plant would be necessary to read visible emissions. The annual cost estimated by EPA includes the cost of certifying two visual emission observers. Therefore, the personnel, time, and costs resulting from the amended regulation are reasonable as discussed in the response to the previous comment.

2.2.7 Comment: It is stated in the proposal preamble that COMS's would increase total annualized control costs by about 3 percent, which EPA considered reasonable. However, the commenters (IV-D-11; IV-F-1) note that individual companies/plants do not assess the reasonableness of costs by comparing the annualized costs of COMS's to the total cost incurred by the portland cement industry. The commenters do not believe all of the costs are reasonable when compared to the questionable benefits to be achieved. Another commenter (IV-F-1) added that, although 3 percent of existing compliance costs may seem small by itself, when it is added to the cost of all the various government requirements, the impact of government regulation is substantial.

Response: The benefits and necessity of continuous monitoring are discussed in other sections of this chapter. The estimate in the proposal preamble of about a 3 percent increase in annualized control costs to which the commenters referred was obtained by comparing the estimated annual cost to operate a COMS to the annual cost of complying with the existing NSPS at a single affected facility. In this analysis, a worst-case cost was used, that is, installation of a COMS on a small clinker cooler (300,000 tons of clinker produced per year) controlled by a fabric filter was assumed. For this clinker cooler, the cost to comply with the existing NSPS would be about $321,000. Based on EPA's estimate at

proposal of the annualized COMS cost, which was $10,700, there was a 3.3 percent increase in annualized control cost. Using EPA's revised estimate of $12,800, the estimated compliance cost increase ranges from 0.6 percent for a large kiln (1,200,000 tons of clinker produced per year) controlled by a fabric filter (control cost of $2,288,000) to 3.8 percent for a small clinker cooler controlled by a fabric filter (i.e., worst case). The amendments will not increase the cost of controlling facilities that are subject to the NSPS but are not required to install COMS's (i.e., the raw mill system, finish mill system, storage facilities, transfer points, and loading/unloading systems). Thus, in most cases, the effect of the COMS requirement will be a cost increase that is less than 3.8 percent of existing overall particulate control costs. For the few facilities that always must install a COMS on the bypass stack, the cost increase would double. However, the resulting impact is still reasonable.

The EPA agrees that comparing the cost of the monitor to the cost of the control device does not necessarily indicate the reasonableness of these costs. However, in this case, EPA believes that COMS costs that are in the range of 0.6 to 3.8 percent of the total particulate control system costs are not unreasonable, especially considering that no other means are available for effective continuously monitoring control system performance and ensuring proper operation and maintenance.

As discussed above, assuming an annual cost of $12,800, the increase in total annualized control costs is 3.8 percent, which is slightly higher than the impact of 3.3 percent presented at proposal. The Agency used this annualized particulate control cost and a product price of $56.78/megagram (Mg) ($51.62/ton) (Docket Item IV-J-9) to assess the impact of the regulation on product price for a medium-size model plant (544,000 Mg/yr [600,000 tons/yr]) with a 76.3 percent clinker capacity utilization rate. This assessment [$12,800÷(544,000 Mg/yrx0.763)] resulted in a product price increase of $0.03/Mg (0.03/ton) for one COMS, which represents an increase of 0.05 percent ($0.03/Mg÷$56.78/Mg) in the product price. The EPA has determined that for the 118 kilns, clinker coolers, and bypass stacks at the 64 plants subject to the NSPS, more than 29 COMS's have been installed, in most cases in response to State

requirements. The remaining 89 units will require an average of less than 2 COMS's per facility. The product price impacts just stated could double for facilities that must install two COMS's; however, the impacts are still reasonable.

The 4-year review of this NSPS revealed that no plants closed as a result of the NSPS, and none are expected to close as a result of the requirement to install COMS's. Data from the Bureau of Mines and the Portland Cement Association (Docket Items IV-J-9 and IV-J-8) show that production is increasing currently in the U.S. after the decline experienced by the industry in the last 1970's and early 1980's. The EPA acknowledges that Mexican cement plants compete with U.S. plants located in areas near the Mexican border. However, the product price increase ($0.03/Mg [0.03/ton]) estimated for one COMS at a medium-size model plant is negligible compared to the $18 per megagram ($20/ton) difference between U.S. and foreign prices and will not have a significant adverse impact on the industry.

2.2.8 Comment: The commenter (IV-D-1) calculated a theoretical cost effectiveness of $1,185 per ton assuming that all of the excess emissions mentioned in the EPA-sponsored study are prevented by COMS's. The cost effectiveness would be $4,740 per ton assuming that half of the excess emissions are caused by improper operation and maintenance and only half of these emissions could be prevented by COMS's. Another commenter (IV-F-1) does not believe that the potential benefits derived from these expenditures are cost effective because plant personnel do not require an opacity monitor to anticipate the need for maintenance or to demonstrate that particular emission control equipment is operating properly.

Response: It is not the purpose of COMS's in themselves to reduce emissions; therefore, EPA does not need to determine the cost effectiveness of COMS's. The Agency has found that excess emissions in the portland cement industry are caused primarily by operation and maintenance problems and has determined that COMS's represent an effective method to ensure that control devices are properly operated and maintained. The commenter did not provide any data, and the Agency is not aware of other procedures as effective as COMS's that can be used to monitor the gradual deterioration of a control device.

2.2.9 Comment: Several commenters (IV-F-1) stated that the cement industry is having severe economic problems because of strong competition from foreign imports; some plants are reducing their work force, and some plants may be forced to close. One commenter (IV-F-1) noted that competition from imports has already resulted in one plant closing and asked EPA to consider only requirements that are absolutely necessary. Two commenters (IV-D-9; IV-D-10) stated that additional surveillance will cost in excess of $100,000 per year per kiln (which would impose too much of an additional burden at a time when U.S. cement plants are struggling to survive against low-cost imports), would only worsen the industry's competitive position in the cement market, and would not reduce particulate emissions any further. Another commenter (IV-F-1) added that the cement industry is not in good shape economically. There is strong competition from imports, primarily from Mexico, which undercut U.S. prices by approximately $20 per ton. Because cement plants are already in compliance with the NSPS, the commenter believes additional requirements are not necessary. Another commenter (IV-D-11) stated that the COMS and visual observation costs incurred to comply with the amendments should be viewed in the overall context of the cement industry's ability to thrive and compete worldwide.

Response: The 4-year review of this NSPS revealed that no plants closed as a result of the NSPS, and none are expected to close as a result of the requirement to install COMS's. Data from the Bureau of Mines and the Portland Cement Association (Docket Items IV-J-9 and 8) show that production is increasing currently in the U.S. after the decline experienced by the industry in the late 1970's and early 1980's. The EPA acknowledges that Mexican competition is putting pressure on plants located in areas near Mexico. However, the product price increase (for one COMS) ($0.03/Mg [$0.03/ton]) cited in the response to Comment 2.2.7 is negligible compared to the $18/Mg ($20/ton) difference between U.S. and foreign prices and will not have a significant adverse impact on the industry.

The commenters' estimated costs of monitoring are considerably higher than those supported by data from plants that have installed COMS's, as explained in the previous responses.

2.2.10 Comment: The commenter (IV-D-16) estimates that the cost for installation of COMS's at his facility (annual production is 500,000 to 600,000 tons per year) will exceed $250,000 with no benefit to the company and no benefit to air quality. The commenter is concerned about the proposed amendments and notes that if they produce 500,000 tons of product per year, approximately $0.50 per ton either must be added to the cost of the product to recover the COMS installation costs or be absorbed by the company, which would result in decreased profits.

Response: The commenter who estimated the cost increase at $0.50 per ton provided no information on the basis of the estimate. However, EPA visited the commenter's facility in 1985 and observed that the facility has two kilns and two clinker coolers subject to the NSPS. There are also alkali bypasses on the kilns, but the exhaust gases from the separate control devices appear to be directed to the kiln control device stack. Thus, it is assumed that four COMS's are needed to comply with the proposed amendments at this facility. (As noted earlier, four is the greatest number of COMS's required by the amendments at any plants.) The EPA estimates the maximum capital cost of installing a COMS to be $40,000 with annualized costs of $12,800. Therefore, the maximum capital cost at the commenter's facility would be about $160,000, and the annualized costs would be about $51,200. The EPA was provided with annual production figures of 453,600 to 544,300 Mg (500,000 to 600,000 tons) for this plant. Thus, the product cost increase at this facility would be $0.11/Mg ($0.10 per ton) (assuming 453,600 Mg [500,000 tons] per year production). This increase is 0.19 percent of $56.78 ($51.62), the 1984 average price per Mg (ton) of cement and is considered a reasonable impact by the Agency. The increase would be even less if the higher rate of production provided by the commenter 544,300 Mg/yr ([600,000 tons/yr]) were achieved.

2.2.11 Comment: One commenter (IV-D-12) stated that the estimated cost of $1.5 million for retroactive installation of COMS's at their company represents 2.8 percent of the corporation's net profits for 1984. The commenter believes that an expenditure of this magnitude should accomplish more than to indicate, redundantly, the need for maintenance. The commenter also claims that EPA has not considered the total economic

impact on the cement industry of the proposal to require retroactive installation of COMS's. The commenter states that his company has 19 COMS's and added that in the background information document, EPA estimated that this company's production represented 11.9 percent of the total industry clinker production. The commenter estimated the total number of opacity monitor installations at 160 (19÷0.119) and concludes that the total cost for industry to comply with the COMS installation proposal will be $12.8 million ($80,000x160). Because of this high cost, the commenter does not believe that any benefits obtained from the opacity monitor proposal are cost effective. The commenter believes that the proposed changes are without merit and are not cost effective, and recommends that EPA maintain the NSPS as they currently exist.

Response: Based on information received by EPA and on the commenter's belief that a total of 19 COMS's will be needed in his company's 17 plants (Docket Item IV-J-8) and on the results of the analysis of the information obtained in the survey discussed previously, this company would experience capital costs of $760,000 and annualized costs of $243,200. (This company submitted information in response to a Section 114 request for costs of COMS installation at one of its plants; the capital cost at the facility presented was $36,900, and the annualized cost was $12,600. For 19 installations, the capital costs would be $701,100 and the annualized costs would be $239,400; these costs are consistent with the EPA estimates presented above.) The annual production for the U.S. cement industry in 1984 according to the Bureau of Mines was 74.4 million tons. If this company produces 11.9 percent of industry production, this company would have produced 8,853,600 tons in 1984. This production level would result in a product cost increase of $0.03/Mg ($0.04/ton). Using the information provided by the commenter, this company's 1984 net profit is calculated to be $53,571,429 ($1.5 million/2.8 percent). This estimate is corroborated by Moody's Industrial Manual, which reports profits for this company of $53,436,000. Thus, based on the EPA cost estimates presented previously, the annualized costs represent 0.4 percent of the annual profit, and the capital costs represent 1.4 percent of annual profit. The Agency considers these impacts to be reasonable.

As stated previously, EPA has determined that there are 118 kilns, bypasses, and clinker coolers subject to the NSPS and that at least 29 of these units are equipped with COMS's. Thus, about 89 additional COMS's will be needed by the industry to comply with the proposed revisions. Using the estimated maximum capital cost per COMS of $40,000 that was discussed above, the industry-wide capital costs are expected to be $3,560,000 (1984 dollars), which is one-fourth to one-third the cost estimated by the commenter. As discussed in previous responses, the Agency believes that these costs are reasonable and that the use of monitors is effective.

2.2.12 Comment: The commenter (IV-D-17) states that the cost to install and maintain a COMS and to evaluate the monitoring data is substantial. According to the commenter, mandatory installation of COMS's on new or modified sources (especially those in remote areas) is not justified. Another commenter (IV-F-1) stated that neither his corporation nor the portland cement industry has the financial and human resources available to satisfy the transmissometer installation and reporting requirements that provide unnecessary or redundant information. Therefore, it was requested that EPA withdraw the proposed amendments. The first commenter also stated that if the manpower and administrative support required to comply with the proposed visible emission monitoring requirements are not provided, a source may be guilty of a "technical violation" and be subject to administrative or legal penalties. This may subject an operator to enforcement action that has "no basis with regard to effects on environmental quality." Therefore, the commenter is opposed to the provisions in the proposed amendments.

Response: The necessity and cost to install, maintain, and to utilize COMS data are discussed in other sections of this chapter. The EPA anticipates that very little manpower and administrative support will be needed to comply with the monitoring and recordkeeping requirements in the majority of cases where a COMS is used because COMS's can be purchased with recorders that produce hard-copy records. (A recorder was included in the EPA cost estimate.) Virtually all new COMS's being installed are equipped with recorders. For monitors not equipped with data reduction systems, an estimated 84 hours/plant/year would be required for data reduction.

Based on data received from five plants presently using COMS's, EPA has determined that very little maintenance is required for COMS's. Continuous opacity monitors experience few malfunctions, and weekly to monthly cleaning and calibration are the only maintenance that is required. Respondents reported spending from $400 to $4,600 per year for calibration, cleaning, and general inspections performed on weekly to monthly schedules. In addition, the personnel requirement for maintaining the COMS and collecting the data is minimal. Therefore, the Agency has determined that installation of COMS's will not impose an unreasonable burden on personnel requirements or finances.

The frequency of submitting excess emission reports was revised from quarterly to semiannual. Also, as discussed in Section 2.7, the separate requirement to submit semiannual malfunction reports has been withdrawn for facilities installing COMS's because malfunction data will be included in the excess emission reports. Thus, the estimated cost of reporting has been reduced to about 2,332 hours per year, and, as a result, the manpower requirements will also decrease.

In regard to the daily visible emission monitoring alternative, which is allowed for all multiple-stack fabric filters and multiple-stack ESP's, the manpower and administrative support necessary will be minimal because only two plants that have become subject to the NSPS since 1979 are known to use negative-pressure fabric filters with multiple stacks. In addition, the 4-year review indicated that less than 20 percent of the fabric filters installed since 1971 are the positive-pressure type, and none of these currently have multiple stacks. Therefore, use of the Method 9 alternative for these sources is expected to occur infrequently and should not result in unreasonable manpower requirements for any plant.

2.3 ENVIRONMENTAL IMPACT

2.3.1 Comment: The commenter (IV-D-1) believes that Agency resources could be better and more effectively expended on what he believes are the major, serious environmental problems. According to the commenter, the portland cement industry presently controls over 99 percent of potential emissions, which are mostly nuisance dust. This level of control has been achieved at high cost during a period when the industry has been in severe

financial distress and is now seriously affected by cheap foreign imports. Pollution control costs approach or exceed 25 percent of the total capital cost of a cement plant. The industry also absorbs the high cost for operating and maintaining hundreds of pollution control devices at each plant while other industries have been allowed to release into the environment vast quantities of hazardous pollutants.

Response: New source performance standards (NSPS) developed under Section 111 of the Clean Air Act were promulgated for portland cement plants on December 23, 1971 (36 FR 24876), because the EPA determined that particulate emissions from the portland cement industry caused, or contributed significantly to, air pollution that may reasonably be anticipated to endanger public health or welfare. Section 111(b)(1)(B) of the Clean Air Act Amendments of 1977 (as mandated by Congress) requires that the EPA review and, if appropriate, revise NSPS every 4 years.

The purpose of the proposed amendments to the monitoring, recordkeeping, and reporting requirements is to ensure that pollution control devices are properly operated and maintained on a continuous basis. No changes to the existing emission limits are recommended. The Agency has reviewed data from 27 kilns and 21 clinker coolers that have become subject to the NSPS since the last review and has determined that the existing standards are still achievable using best demonstrated technology, considering costs. We have interpreted the commenter's statement concerning control costs to mean that the total cost of all pollution control devices at a typical plant approach or exceed 25 percent of the total capital cost of the plant. The Agency has no data to confirm or refute this statement. However, the proposed amendments to this NSPS apply only to air pollution control equipment on kilns and clinker coolers. Appropriate pollution control cost information was included in the original NSPS background information document and Federal Register notice. The current 4-year review did not include any information that indicated reexamination of the original costs was appropriate. Information obtained from five plants that have already installed COMS's indicates that the use of COMS's would increase total annualized control costs by a maximum of 3.8 percent, which is considered a reasonable impact by the Agency, as are the product price impacts presented in response to previous comments.

Standards have been developed under Section 112 of the Clean Air Act (CAA) for several hazardous air pollutants, which are contained in 40 CFR Part 61. Pursuant to Section 112 of the CAA, the following substances have been designated as hazardous air pollutants: coke oven emissions, inorganic arsenic, and radionuclides. The following list presents other substances for which a Federal Register notice has been published that included consideration of the serious health effects, including cancer, from ambient air exposure to the substances: acrolonitrile, chromium, carbon tetrachloride, ethylene oxide, chloroform, ethylene dichloride, cadmium, 1,3 butadienne, methylene chloride, perchloroethylene, trichloroethylene, chlorinated benzenes, chlorofluorocarbon, epichlorohydrin, manganese, methyl chloroform, polycyclic organic matter, toluene, and vinylidene chloride. In addition, EPA is planning to publish an intent to list for substances that the Agency has determined can impose an "immediate threat to life and health" in the event of an accident at a chemical facility. These substances can be widely categorized as acids, cyanides, industrial gases, pharmaceuticals, chemical intermediates, pesticide compounds, metals and compounds, solvents, chemical warfare agents, flavors and fragrances, and catalysts and reagents (Docket Items IV-J-7).

2.3.2 Comment: The commenter (IV-D-1) believes that use of opacity monitors will lead to an increase in emissions. Presently, operators try to keep emissions near zero because of the unreliability of "smoke reading." With a monitor used as the primary measurement of compliance, there will be a tendency to operate the control device such that the opacity of emissions is near the allowable limit rather than near zero. The monitor would be used to determine when maintenance or operational changes are needed. Therefore, maintenance on fabric filters and ESP's will be postponed until opacity approaches or exceeds the allowable limit. The requirement to install opacity monitors has not been justified, and there would be no positive effects on the environment. In fact, COMS's represent a significant cost in time, attention, and funds and would have a negative environmental impact because the overall emissions are likely to increase as a result of monitors.

Response: Excess emissions data are used as an indicator of a source's compliance status and may be used to target inspections, performance tests, or other enforcement activities, but they are not used as the sole evidence of a violation of the standards. Visible emission observations, either by a trained observer or a continuous opacity monitor, are intended to ensure that control equipment is being properly operated and maintained on a continuous basis. Any abrupt increase in visible emissions should alert the operator that the air pollution control device is malfunctioning. If visible emissions increase gradually over time and approach the visible emission standard, the operator is alerted that the control device needs maintenance or is being improperly operated.

It is not intended that the operator wait until the opacity nears or exceeds the limit before resolving any problem with a control device. The Agency received no data to show that plants that already have COMS's use this procedure. Also, because emission control equipment does represent a substantial investment for the source owner, the Administrator does not believe that maintenance on control equipment will be postponed until opacity approaches or exceeds the allowable limit.

2.3.3 Comment: Several commenters (IV-D-11; IV-F-1) do not believe that the monitoring or observation requirements would protect the public health and welfare as directed by Section 111(b)(1)(a) of the Clean Air Act because neither opacity monitors nor visual observations are emission control technologies that limit particulate emissions. According to the commenter (IV-D-11), the preamble does not make the connection between COMS or visual emission observations and the protection of public health and welfare.

Response: New source performance standards for portland cement plants were proposed and promulgated under Section 111 of the Clean Air Act, which requires control of emissions from industrial sources that cause, or contribute significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare. However, the monitoring requirements published on September 10, 1985, were proposed under the authority of Section 114 of the Clean Air Act, not Section 111. The purpose of the monitoring requirements, as discussed in the proposal preamble, is to ensure proper operation and maintenance of

control equipment. Section 114 allows the Administrator to require an owner or operator of an emission source subject to the requirements of the Clean Air Act to ". . . install, use, and maintain such monitoring equipment or methods . . . as he may reasonably require . . . ."

2.3.4 Comment: Several commenters (IV-F-1; IV-D-18) state that the costs associated with installation of COMS's cannot be justified because their affected facilities are meeting the visible emission standard, and COMS's would not improve air quality. Another commenter (IV-D-10) requests that the proposed amendments to the NSPS be withdrawn because he believes the proposed continuous monitoring requirement on kiln and clinker cooler stacks will add nothing to improve the environment.

Response: Substantial particulate emissions occur in excess of those expected following initial installation of control equipment at cement plants. Major causes of these excess emissions are control equipment downtime, malfunctions, and deterioration over time because of inadequate design or inadequate operation and maintenance practices (Docket Item II-A-4). In the EPA-sponsored study referred to in the response to Comment 2.1.1., it was concluded that annual excess emissions from cement plants, specifically rotary kilns, were high relative to other sources and were caused primarily by operation and maintenance problems. The Agency has determined that COMS's represent an effective means for ensuring proper operation and maintenance of air pollution control equipment. In addition, COMS's help to ensure effective enforcement of the standards because data from COMS's can indicate that a compliance test is needed at a plant.

2.4 SELECTION OF EMISSION LIMITS

2.4.1 Comment: The commenter (IV-D-17) believes that "opacity" is a poor technical standard, and visible emissions should only be used to identify sources that may require more frequent evaluation with regard to actual mass emissions. The proposed standard does not address the reliability of opacity observations. The commenter states that it is possible for two stacks with identical mass emissions to have significantly different visible emissions, e.g., a 15-ft-diameter stack would have an opacity twice as great as an 8-ft-diameter stack. Visible emissions observed

using EPA Method 9 will also vary significantly with the time of day, position of the observer, season of the year, and geographical location of the source. There is also a problem with uncombined water that may form in a stack and that results in false, high, in-stack visible emissions that may dissipate through evaporation when exhausted to the atmosphere. The commenter states that these factors and the geometry of affected point sources were not addressed in the proposed standards. The commenter believes there is sufficient technical evidence available at this time, which was not available in 1971, that should be considered in EPA's proposal to confirm visible emission limits of 10 percent opacity for clinker coolers and 20 percent opacity for cement kilns. The commenter recommends that 40 CFR Part 60, Subpart F, be revised to delete all references to visible emission limitation including 60.62(a)(2), 60.62(b)(2), and 60.62(c). In addition, proposed additions to 60.63(b), (c), (d), (e), and (f); associated recordkeeping requirements; and references to EPA Method 9 for measuring opacity should be deleted. The commenter states that the technical bases for establishing visible emission standards are inadequate and erroneous.

Response: Visible emission observation data will be used to ensure effective enforcement of the standards because the data can indicate that a compliance test is needed at a plant.

The visible emission standards for the portland cement industry have been tested by time, experience, and litigation. The response to the portland cement plant remand (EPA Response to Remand ordered by U.S. Court of Appeals for the District of Columbia in Portland Cement Association v. Ruckelshaus, 486 F. 2d 375, June 29, 1973) discusses in great detail the reliability and accuracy of Reference Method 9. On the basis of this response, the visible emission standard was affirmed by the Court on appeal (Portland Cement Association v. Train, 513 F. 2d 506, May 22, 1975).

Stack diameter affects opacity directly because it governs the length of the path through which the light is attenuated before it reaches the observer viewing the plume. The larger the diameter of the stack, and therefore the plume, the more light will be attenuated as it passes through the plume, and the greater will be the opacity of the plume. An

extremely large diameter stack could theoretically be installed at a cement plant, even though its cost would be much greater than normal. During the industry survey that EPA performed in response to the remand of the portland cement NSPS, the largest stack found was 15 feet in diameter. During the present survey, we found only one stack that was larger than 15 feet in diameter, and this stack has been modified to reduce its diameter from 16 feet to 8 feet at the outlet. Therefore, the Agency knows of no stacks in the industry that are larger than the 15-foot-diameter stack discovered during the NSPS remand survey. In the unlikely event that larger stacks were used or other abnormal conditions of design or operation were encountered that could cause a violation of an applicable visible emission standard, EPA provides a means through which the source owner may petition the Administrator for an adjusted visible emission standard. The EPA concludes, on the basis of the actual stack diameters employed by the industry, that stack diameter will not cause a plant meeting the mass emission standard to exceed the visible emission standard.

The commenter mentions several variables that may have an effect on visible emission observations. In 40 CFR Part 60, Appendix A, it is stated that variables that can be controlled to the extent that they no longer exert a significant influence upon plume appearance include the angle of observer with respect to the plume, angle of observer with respect to the sun, and angle of the observer with respect to a plume emitted from a rectangular stack with a large, length-to-width ratio. Included in this section are specific criteria applicable to these variables. Formation of water droplets in a stack that result in high, in-stack opacity can be a problem. However, this situation is mainly associated with the operation of wet scrubbers and not with dry control devices. Although exhaust gases from wet process kilns may have more moisture than exhaust gases from dry process kilns, the conditions that exist in the stack in either case (pressure, temperature, and humidity) should not normally result in the water condensing at this point. In situations where condensed water is present within the plume as it emerges from the stack outlet, i.e., a steam plume, Method 9 requires that opacity observations be made beyond the point in the plume at which condensed

water is no longer visible. The visible emission standards are based on data collected from kilns representative of the industry, and data gathered during this 4-year review indicate that the visible emission standard is being met.

The commenter has not provided any data to support comments that sufficient technical evidence now exists to question the reliability and usefulness of opacity as a technical standard or that the technical basis for the visible emission standard is inadequate and erroneous. Data on visible emissions were obtained for the original portland cement NSPS and in response to the remand. The data were gathered at various locations, at different times of the year, and, in the longest case, over a 9-hour time span. In all cases, the opacities observed were lower than the visible emission standard if the facility was in compliance with the mass emission standard. The visible emission standards are based on data obtained by certified visible emission observers during normal operation of plants representative of the industry. Mass emission and visible emission data were obtained from six plants, and visible emission data were also obtained from four additional plants. The use of visible emission standards is technically sound and provides the most practical and inexpensive means to monitor the performance of control equipment.

2.4.2 Comment: The commenter (IV-D-14) proposes that the NSPS requirements be modified to include a sulfur dioxide (SO_2) limit and monitoring requirement. While the commenter agrees that there are no demonstrated add-on SO_2 controls, there have been many reports of successful programs using operating parameters to control SO_2 emissions. The commenter suggests that these programs could serve as the basis for including an SO_2 limit and monitoring requirement.

Response: The Agency's 4-year review indicated that many factors affect SO_2 emissions including sulfur content of the fuel and raw feed, the point in the process at which SO_2 removal occurs (e.g., clinker, raw mill, control device, and exhaust gases), and the relative importance of process variables (e.g., temperature, moisture, and feed chemical composition). Data on the amount by which operating parameters, particulate control devices, or add-on SO_2 control technology reduce SO_2 emissions from cement kilns are incomplete and inconclusive.

Several plants have successfully used SO_2 and NO_x monitors as an indication of proper process operations. Sulfur dioxide emissions have been found to be an indication of efficient combustion in the kiln, while NO_x emissions are related to the flame temperature in the kiln. Individual plants use these monitors to warn the operator if an adjustment needs to be made in the process to improve the operation of the kiln and cement quality. Because of the many factors that affect SO_2 and NO_x emissions, such adjustments are plant specific and cannot be used as a basis for a nationwide emission limit or monitoring requirement for SO_2 or NO_x at this time. Therefore, development of SO_2 emission limits at this time is not possible. The Agency will review demonstrated control technologies in use at portland cement plants during the next 4-year review.

2.5 LEGAL CONSIDERATIONS

2.5.1 Comment: Several commenters (IV-F-1; IV-D-2; IV-D-3; IV-D-9; IV-D-11; IV-D-12; IV-D-16; IV-D-17; IV-D-18) state that requiring installation of COMS's on existing facilities is illegal. These commenters believe that EPA has incorrectly interpreted the language and intent of the Clean Air Act as permitting such a requirement and that EPA is setting a dangerous precedent.

Three commenters (IV-F-1; IV-D-12; IV-D-18) believe that the statutory language of Section 111 and the legislative history of the 1977 amendments to the Clean Air Act expressly state that all NSPS, including revisions, are effective only prospectively and not retroactively. The commenters cite the House of Representatives Conference Report on H.R. 6161: "Any revised requirement under Section 111(b) would of course be effective only prospectively and would not apply to any source which actually commenced construction or modification before such revised standards became effective." Another commenter (IV-D-2) states that it is contrary to the intent of the Clean Air Act to use Section 114 (inspections, monitoring, and entry) to adopt retroactively NSPS that circumvent the prospective provisions of Section 111 (standards of performance for new stationary sources). The commenter (1) contends that only sources for which construction commenced

or that are modified after the date of proposal of the revisions are subject to the amendments, which are effective at promulgation, (2) the prospective applicability of NSPS has been uniformly recognized by the Agency both in its promulgation of NSPS and its enforcement of them, and (3) most of the recently promulgated NSPS have required some form of opacity monitoring; however, the Agency is not free to apply its new source regulations retroactively. The commenter cites cases where courts uniformly have recognized that NSPS are effective only prospectively.

One commenter (IV-D-17) states that the technology for reliably determining optical density and relating it to opacity was not demonstrated and not available in 1971. According to the commenter, EPA is now suggesting that it has the authority to require sources that have been in operation for many years to employ a technology that was not available when the sources were constructed.

Response: The Administrator disagrees with these commenters. The authority for these requirements is not Section 111 but Section 114 of the Act, 42 U.S.C. § 7414, which provides:

> (a) For the purpose (i) of developing or assisting in the development of . . . any standard of performance under Section 7411 of this title . . . [or] (ii) of determining whether any person is in violation of any such standard . . .
>
> (1) The Administrator may require any person who owns or operates any emission source . . . to (A) establish and maintain such records, (B) make such reports, (C) install, use and maintain such monitoring equipment or methods, (D) sample such emissions (in accordance with such methods, at such locations, at such intervals, and in such manner as the Administrator shall prescribe), and (E) provide such other information as he may reasonably require . . . [emphasis added].

"[S]ection 114(a)(1) identifies a certain composite class of persons--those who own or operate emission sources or who are subject to any requirement of the Act--and authorizes the Administrator to require any person in that class to do any or all of the five things enumerated." Ced's Inc. v. EPA, 745 F.2d 1092, 1098 (7th Cir. 1984) (emphasis added). "[T]he agency is authorized to request the owner or operator . . . to supply the agency with whatever information it 'may reasonably require' to carry out its statutory responsibilities." U.S. v. Tivian Laboratories, Inc., 589 F.2d 49, 53 (1st Cir. 1978).

There is no exemption in Section 114 for sources that have already been constructed. Indeed, it is hard to imagine how any such exemption could be consistent with the broad purposes of Section 114 to provide the Administrator with information necessary to adopt and enforce standards under the Act.

The amendments require monitoring, recordkeeping, and reporting of emissions from kilns and clinker coolers that are subject to the NSPS. These requirements will ensure proper operation and maintenance of control equipment. Continuous opacity monitors help to ensure effective enforcement of the standards because data from a COMS are used as an indicator of the compliance status of the source and may be used to identify the need for inspections, performance tests, or other enforcement activities. Thus, the proposed requirements, imposed for the purposes of determining whether persons are in violation of the NSPS and of developing future standards of performance, fall squarely within the grant of authority in Section 114.

2.5.2 Comment: The commenter (IV-D-1) believes that self-monitoring and reports of violations and excess emissions would be self-incriminating and, thus, unconstitutional if they are used in criminal proceedings.

Response: The Administrator disagrees. Information gathering that is reasonably related to administration of a lawful regulatory program does not run afoul of the privilege against self-incrimination. Shapiro v. United States, 335 U.S. 1, 32-35 (1948). Moreover, virtually all the persons subject to the monitoring and reporting requirements are corporations, which do not have any privilege against self-incrimination. United States v. Kordel, 397 U.S. 1, 7 (1970).

2.6 TESTING AND MONITORING

2.6.1 Comment: An air pollution control agency official (IV-D-8) agrees with the Agency that 180 days after initial startup of a facility is sufficient time in which to conduct a performance test and states further that the 180-day limit is probably too long. However, in response to the announcement at the public hearing, two portland cement companies (IV-F-1; IV-D-12) do not believe that 180 days is enough time for manufacturers to supply all the COMS's that will be required to comply with the regulation

and requested that the 180-day period be verified. Based on information provided in the background information document, one cement company estimates that at least 100 COMS's will have to be installed industry wide assuming that COMS's already on pre-1979 kilns will have to be replaced. This does not include those also required on bypass stacks. Every installation is different, and 180 days may not be a realistic time period for the engineering, delivery, installation by contractors, and certification of COMS's. One commenter estimates that it would require up to 2 years for his company just to prepare and approve capital budgets, engineer the installation, order the equipment, and install the total of 19 COMS's that would be required.

Response: Several COMS vendors and one consultant were contacted to determine if the 180-day requirement for installation of COMS's could be reasonably met (Docket Items IV-B-3 and IV-E-11, 12, 13, and 14), and they agreed that 6 months is a reasonable time period. The primary factor affecting whether the 6-month deadline can be met is delivery time. Estimates of delivery time ranged from 1 week (a rush order) to 2 months with an average delivery time of 1 month. Time for placing the order ranged from 1 to 8 weeks depending on whether the facility orders directly from a catalog or requests vendors to submit bids, provide a list of references, or perform demonstrations. The COMS's are fairly standard in design and do not have to be custom-made, and it is not expected that companies will invest a substantial amount of time in ordering.

Installation is expected to require 1 to 2 weeks if the existing platform is used. If the platform (or other means of access) also requires modifications, up to 2 months could be needed for installation. However, the platform could be modified before delivery of the COMS. Testing and certification are relatively simple procedures and would require approximately 1 week. Writing and submitting a report to the State agency or EPA regional office would take between 2 and 4 weeks. In the worst case, a period of 6 months would be required for a COMS to be on line. In most cases, however, startup of a COMS will require only 3 to 4 months.

The vendors contacted also confirmed that they would be able to supply the projected number of COMS's that will be required for plants in

this industry to comply with the regulation. Therefore, the Administrator believes that 180 days provides sufficient time to order, install, and test the COMS's required on affected facilities at portland cement plants.

2.6.2 Comment: Several commenters (IV-F-1; IV-D-9; IV-D-12; IV-D-17) questioned the necessity and fairness of the requirement to retrofit COMS's on existing kilns and clinker coolers. The commenters claim that EPA has not demonstrated that COMS's improve operation and maintenance beyond that provided by existing equipment and current operating practices. The commenters gave the following reasons why they believe COMS's are not necessary:

1. The EPA acknowledged that present standards are being met, and, therefore, neither monitoring nor visual observations are technically justified;

2. The EPA has not supported or documented the statement that COMS's or Method 9 observations will necessarily improve proper operation and maintenance of control equipment;

3. The COMS's do not prevent malfunctions and are not required for determining whether controls are functioning properly;

4. The COMS's in themselves do not reduce emissions and EPA has not demonstrated that the magnitude of particulate emissions from portland cement plants warrants installations of COMS's;

5. Information from COMS's would only be redundant because methods other than COMS's are available for monitoring proper operation and maintenance. For example, pressure drop and temperature alarms give adequate notice to the operator of sudden and total failure of fabric filters, failures of electrostatic precipitators are identified by alarm systems, and gradual deterioration in performance of these devices is easily detected by visual observations by personnel and by monitoring electrical parameters. In modern plants, electrical parameters are monitored by computers that are interfaced with alarm systems. Existing controls to ensure product quality are an additional safeguard against deviations from normal operation. Process parameters are closely monitored, and additional monitoring is redundant.

In addition, in many plants, maintenance scheduling systems (MSS) are in use that include additional periodic monitoring of particulate matter

control systems by maintenance personnel. In some cases, records of these inspections are required under the operating permit; and

6. Portland cement plants are already subject to frequent monitoring by State and local agencies and by EPA. A representative of the Portland Cement Association asked a public hearing speaker (IV-F-1) representing a cement company to state the kinds of ongoing inspections or reporting requirements his company presently meets that might demonstrate redundancy to those areas in the proposed amendments. The cement company representative responded that its three plants have ongoing EPA and State inspections and that the proposed requirements are redundant. In Region 9, there is an inspection every 4 to 5 years by EPA contractors who also perform Method 9 observations. In California and Arizona, permits require that plants conduct compliance tests once per year, and some plants occasionally test as often as every 3 months. These tests are also observed by State and local representatives. Several commenters (IV-D-7; IV-D-10; IV-D-13; IV-D-16; IV-D-17) contend that sufficient reporting and inspection procedures are already in place to make the additional requirements unnecessary. Many States already conduct spot checks or annual on-site inspections or require annual compliance tests that include source tests and Method 9 observations. One commenter states that his company's cement plants are already monitored frequently by county or State regulatory agencies, and frequent written reports as well as verbal notifications on specific problems are required. Plant personnel usually make daily (or more often) visual inspections.

Response: The EPA disagrees with the commenters' assertion that COMS's are not necessary and responds to each point made by the commenters as follows:

1. The Agency agrees that the standards are being met as determined by the initial performance tests using Reference Methods 5 and 9. However, compliance tests can only demonstrate that a source is meeting the applicable standards at the time the tests are conducted. Without continuous opacity monitoring via either a COMS or visual observation, neither the plant operator nor enforcement personnel can determine whether control equipment is properly operated and maintained on a continuous basis and whether there is reason to believe that the standards are being exceeded.

2. The Agency believes that the benefits of continuous monitoring in ensuring proper operation and maintenance are considerable. The effectiveness of COMS's in accomplishing this goal has long been recognized by the Agency (see 49 FR 18076, April 26, 1984; 44 FR 33580, June 11, 1979; 36 FR 24876, December 23, 1971.) Furthermore, the need for COMS's for the portland cement industry has been recognized since the first 4-year review, and the use of COMS's was recommended in the Federal Register notice summarizing the results of that review (44 FR 60761). Such monitoring will alert the operator to the gradual deterioration in control device efficiency that may occur over time as the result of inadequate maintenance and improper operation, thus, allowing the owner or operator to take the necessary action, either a change in operation or increased maintenance, to minimize the increase in emissions. Therefore, a COMS will result in improvements in the operation and maintenance of the control device.

3. The COMS's are not intended to prevent malfunctions; they are required to ensure that control equipment has not deteriorated over time and is being properly operated and maintained. This may aid in preventing malfunctions by alerting the operator to potential problems that could cause malfunctions.

4. It is not the purpose of COMS's in themselves to reduce emissions. In an EPA-sponsored study on operation and maintenance problems, the total annual excess emissions from cement kilns were approximately 35 Mg (38 tons) per kiln per year. The Agency has determined that COMS's represent an effective means for ensuring proper operation and maintenance of particulate matter control equipment, which should, in turn, reduce excess emissions. Thus, indirectly, emissions are reduced by the use of COMS's. The Agency has discovered no other means as effective as requiring the use of COMS's to ensure proper operation and maintenance of control equipment.

5. Monitoring of pressure and temperature for facilities with fabric filters and monitoring of electrical parameters for facilities with electrostatic precipitators may alert the operator to sudden and total failure of the control device; however, there is no evidence that these indicators are sensitive to the subtle and gradual deterioration of the

control device that may occur over a period of time. In fact, one utility company has found that COMS's represent a feasible method of optimizing ESP performance (Docket Item IV-J-10). In contrast to stack testing, COMS's allow real-time observations of the effects of fuel changes and control system changes (e.g., excess air levels, precipitator voltage, and rapping) on process operation and control device performance.

Furthermore, the Agency has found that excess emissions at cement plants are caused primarily by improper operation and maintenance. Although the MSS may be used in some plants to ensure proper maintenance, the Agency believes that use of COMS's is the most effective means to ensure that the control equipment is properly operated. The Agency has no information to show whether visual observations are routinely performed at all cement plants; however, where use of a COMS is practicable, a COMS can provide continuous data. Therefore, the Agency believes that a COMS (where use is feasible) is the most effective means to ensure proper operation and maintenance. There are no data to show how monitoring of process parameters will ensure that pollution control equipment is properly operated and maintained on a continuous basis. For these reasons, the Agency has determined that COMS's are appropriate and necessary as indicators of proper control device operation and maintenance and that their use will significantly reduce the quantity of excess emissions from portland cement plants.

6. The commenter does not provide any information about the type and/or frequency of monitoring by State, local, and EPA personnel. Arizona does not have any plants subject to the NSPS, but two plants are subject to State regulations. In California, 8 of 13 plants have facilities subject to the NSPS. The Agency has found that at least four of the plants in California have already installed COMS's on their kilns. The EPA does not consider inspections that are sporadic rather than continuous to be redundant with the monitoring requirements of the proposed amendments. Based on conversations by EPA with several State and local agency representatives including the States mentioned by the commenters, some plants are subject to annual walk-through inspections, but few plants (if any) are subject to annual compliance stack testing. (See entries in Docket Category IV-E). Annual and periodic inspections

performed by State and local agencies are intended to determine compliance with the standards and are not intended to ensure continuous proper operation and maintenance of particulate matter control equipment. About one-half of the kilns subject to the NSPS are already using COMS's. Excess emission reports submitted pursuant to State or local requirements can be copied and submitted to the Administrator to fulfill the NSPS reporting requirement if such reports satisfy EPA's information requirements.

2.6.3 Comment: The commenter (IV-D-1) believes that EPA should address the fact that there are fundamental process differences in the cement industry that will affect the utility of COMS's as compliance verification devices. The commenter notes that transmissometer readings are unreliable in the presence of high moisture. High moisture content at certain temperatures, in conjunction with dust particles that serve as condensation nuclei, can cause condensation that may result in false high opacity readings. The commenter states that a thorough evaluation of the fundamentally different factors among various kilns is required prior to any proposal to install opacity monitors on all kilns.

Response: Installation of COMS's is intended to evaluate operation and maintenance of control equipment routinely. Such COMS's are presently being used effectively on wet and dry kilns controlled by fabric filters and electrostatic precipitators by about one-half of the kilns in the industry subject to the NSPS. The data base supporting the visible emission standard covers a wide range of processes. There are no obvious factors that would preclude the use of COMS's with any process, and no additional data were supplied that support the statement that fundamental process differences will affect the utility of COMS's as compliance verification devices. As discussed in the response to Comment 2.4.1, high moisture content stack gases are not generally a problem in the cement industry. However, if a source has a peculiarity that precludes achieving the visible emission standard, the provisions of 40 CFR Section 60.11(e) allow the owner or operator to petition for establishment of an individual visible emission limit provided that certain conditions are met. The Agency did evaluate process variations prior to its proposal to require COMS's on all kilns and concluded that there were no known factors that would adversely affect the use of COMS's with any kiln process.

2.6.4 Comment: The commenter (IV-F-1) believes EPA will use COMS's for enforcement purposes rather than for operation and maintenance purposes and does not understand why EPA will not clearly state the enforcement aspects of the transmissometer requirement. In addition, EPA has not shown that Method 9 observations are inadequate for detection of violations of the opacity standard and has not resolved the inconsistencies in the results of COMS and Method 9 readings. For example, it has been the commenter's experience that when there is a difference between Method 9 results and COMS results, the Method 9 opacity is the higher of the two. It is possible that COMS readings will be used only as an enforcement tool to prove violations of the visible emission standard but not to prove compliance. The commenter requested that EPA deal with the enforcement aspect of the proposal now rather than later.

Response: The continuous monitoring results are not used as the sole evidence in determining violations of the NSPS. Opacity data on excess emissions are used as an indicator of the compliance status of the source and may be used to target inspections, performance tests, or other enforcement activities. Another purpose of the continuous monitoring requirement is to provide plant operators and enforcement personnel with information about whether a control device is properly operated and maintained. As stated in Section 60.11 of the General Provisions, "the results of continuous monitoring by [a] transmissometer . . . are probative but not conclusive evidence of the actual opacity of an emission . . . ."

The Agency has never indicated in any way that Method 9 observations are inadequate for detecting violations of the visible emission standard. Indeed, Method 9 has been the method for determining opacity compliance for many years.

2.6.5 Comment: An air pollution control agency (IV-D-19) noted that for one plant located in its State, the value of COMS's on kiln stacks to provide a record of compliance with the State's visible emission standard has been questionable because the kiln often emits a condensing plume. The COMS opacity readings are, conservatively, 20 to 25 percent below simultaneous visible emission readings. The commenter requests that before promulgation EPA determine a procedure to follow when COMS's and

certified visible emission readers are in disagreement. A related problem concerns the discrepancy which would exist between sources subject to the same regulation. If similar sources (with condensing plumes) choose to meet monitoring requirements by the two different methods--visible emission readings and COMS's--the source with the COMS's will be less likely to violate visible emission standards than the source using certified visible emission readings, although mass emissions would be about equal. The commenter foresees no problem with the proposed regulations and their application on clinker cooler control equipment.

Response: Opacity data used to support the standard were obtained from plants representative of the industry. In obtaining the data used to support the visible emission standard, certified observers read the opacity of emissions at the top of the stack, not in the condensed plume. Therefore, to compare Method 9 observations to COMS readings, the opacity should be read at the top of the stack before condensation occurs. The Method 9 observation taken in this manner should agree with the COMS reading within error limits. If, in some cases, there is a significant difference between the COMS results and Method 9 readings, the Administrator has determined that these situations should be evaluated on case-by-case basis by the appropriate enforcing agency. The procedures to be followed would be case specific, depending on the magnitude of the differences, the level of the Method 9 opacity data in relation to the emission standard, and whether the difference is consistent or variable with time. In any case, Method 9 observations would be used as conclusive evidence of a source's compliance with the opacity standard. As stated in the previous response, the COMS data would be used as an indicator of the source's compliance status and would highlight situations where additional surveillance by enforcement officials may be necessary.

2.6.6 Comment: The commenter (IV-D-17) is opposed to provisions of the proposed amendments that would require installation of COMS's on all new or modified kilns and coolers, including sources constructed after August 17, 1971. The commenter owns a facility in Alabama that would be adversely affected (financially) by such a requirement. Virtually all State agencies currently have the authority to require continuous emission monitoring. By including the COMS requirement in the NSPS, EPA would be

preempting the authority of State agencies to determine when it is appropriate to require installation of transmissometers. There are some circumstances where the cost of installing and operating COMS's in remote areas would not be justified. The mandatory requirement to install COMS's as part of the NSPS is unnecessary and inappropriate. He believes the discretion to require COMS's should remain with State agencies.

Response: Section 114 grants the Administrator the authority to require an owner or operator of an emission source to ". . . install, use, and maintain such monitoring equipment or methods . . . as he may reasonably require. . . ." The necessity and cost of installing, maintaining, and utilizing COMS data are discussed in other sections of this chapter. Several State and local agencies require COMS's and find that they perform well. (Docket Item IV-D-14 and entries in Docket Category IV-E.) Because excess emissions from cement plants are relatively high and are caused primarily by operation and maintenance problems, EPA has concluded that COMS's are necessary to ensure the intent of the NSPS is being met even when plants are located in remote areas. Authority to enforce NSPS is delegated to States, but EPA sets the minimum criteria. States can still have requirements that are more stringent than the NSPS.

2.6.7 Comment: A State agency official (IV-D-14) believes the requirement to take three visual observations per day may not be enforceable much of the time because of weather conditions (overcast skies and gray backgrounds), especially in the Pacific Northwest. The commenter questioned whether the source would be violating the monitoring requirements if observations could not be made and whether the plant would require a full-time observer to be available when the weather conditions permit visible emission readings to be made. The commenter believes that these and other problems related to enforcing the visual observation requirement would be significant and unfair and, thus, recommends that all plants be required to install COMS's.

Response: The proposed requirement allows Method 9 observations to be made in lieu of installing COMS's at plants with multiple stacks on either positive-pressure or negative-pressure fabric filters and on ESP's. Observations in these cases would be conducted for three 6-minute

periods each day. If a plant has the option to use COMS's or Method 9 and elects to use Method 9, the plant would need to take whatever steps are necessary to obtain at least three 6-minute observations of visible emissions once per day in accordance with Method 9. If, due to inclement weather, certified observers were unable to perform visual observations, enforcement officials will not consider the plant in violation of the monitoring requirement as long as these occasions are documented. In addition, the Method 9 alternative is expected to be used infrequently as discussed in the response to Comment 2.2.13. For these reasons, the Agency does not believe that the visual observation alternative will result in an enforcement problem.

2.6.8 Comment: The commenter (IV-D-2) states that the visible emission observation requirements for negative-pressure fabric filters with multiple stacks are unclear as to whether Method 9 observations are to be made for each emission point or whether the Method 9 observations should be made only for malfunctioning units. If it is intended that each emission point be observed, the requirement is unnecessarily cumbersome. The commenter estimates that observation of each emission point by Method 9 would require 4 hours per day and would result in little environmental benefit. If it is intended that Method 9 observation be used only for malfunctioning units, the commenter suggests that the observer's time might be better spent turning the malfunctioning unit off.

Response: The regulation has been revised to clarify that, where visible emissions are observed at a number of emission sites on either multiple-stack fabric filters or ESP's, Reference Method 9 observations must be made for the emission site with the highest opacity. This is applicable to owners and operators of existing and new, multiple-stack, positive-pressure or negative-pressure fabric filters and multiple-stack ESP's that elect to perform visible emission observations in lieu of installing COMS's.

2.6.9 Comment: The commenter (IV-D-4) requests that the visible emission observations either be dropped or changed to require observations for a longer predetermined time period each day. It is unlikely that observations conducted for three 6-minute periods each day would identify any excess emissions since the source could easily select a time period to conduct observations during which the opacity of emissions was low.

Response: Visible emission observations are intended to ensure that control equipment is being properly operated and maintained where use of a single COMS is not feasible. A gradual deterioration of the control device performance would tend to be noticed over time as an increase in visible emissions. In this case, it is unlikely that an operator could choose a time of day when this deterioration would not be obvious. The Agency believes that any longer period of observation, e.g., six 6-minute periods, would not provide any better information on control device performance than is provided by three 6-minute periods. The Administrator believes that three 6-minute observation periods each day are useful in situations where multiple stacks are used and, therefore, has not dropped this requirement. Moreover, it is expected that this alternative will be used infrequently for the reasons discussed in the response to Comment 2.2.13.

2.6.10 Comment: Although the commenter (IV-D-16) does not agree that the proposed amendments are necessary, it was suggested that the Agency require that plants document the occasional opacity exceedances that occur as a result of equipment malfunction rather than require visible emission observations during periods of normal operation. Reports of occasional opacity exceedances are already provided to the State agency by the commenter.

Response: The General Provisions (Section 60.7) do require that records be kept on malfunctions of an affected facility or the air pollution control equipment. The purpose of the continuous monitoring requirement is to provide plant operators and enforcement personnel with information to assess whether a control device is being properly operated and maintained on a continuous basis. A plant operator may not be aware of the deterioration of the control device over a period of time if opacity exceedances that occur only as a result of equipment malfunctions are documented. Thus, it is necessary to perform visible emissions observations during periods representative of normal process operations.

Certain reports required by State or local agencies may duplicate information required by this standard. In such cases, the General Provisions [Section 60.7(e)] provide that a copy of the report submitted to the State or local agency can be provided to the Administrator in lieu of the report required by the standard.

2.6.11 Comment: Two commenters (IV-F-1; IV-D-2) believe that multiple stacks are environmentally superior to single stacks and that the proposed regulation would provide a strong disincentive to the use of multiple stacks. One commenter states that at one time multiple-section fabric filters were vented to a single stack, but the system impeded the rapid detection and correction of a malfunctioning baghouse section. It may take an observer an hour to find the cause of a subtle change in plume opacity. With multiple stacks, a malfunctioning baghouse section is easily identifiable by virtue of its contrasting plume opacity relative to the opacity of the plumes of adjacent stacks, and that compartment can be taken off-line right away. One commenter (IV-D-2) suggests that EPA reevaluate its position on open-top baghouses if EPA is in favor of good maintenance. The commenter also requests that owners or operators using electrostatic precipitators with multiple stacks be afforded the alternative to use visible emission observations in lieu of in-stack monitoring, as is permitted for fabric filters with multiple stacks.

Response: The EPA has reevaluated its position on multiple-stack fabric filters and ESP's. The Administrator agrees that multiple-stack control devices may have some economic and environmental advantages, as described in the comment. Therefore, the Administrator does not want to discourage the use of multiple-stack control devices by requiring installation of multiple COMS's. Also, at the time of proposal, EPA was not aware that any portland cement plants use ESP's with multiple stacks. Because one plant is now known to use multiple-stack ESP's, the Agency will allow the alternative of performing visible emission observations using a certified observer in lieu of installing COMS's. Thus, the regulation has been revised to allow owners or operators of existing and new, multiple-stack, positive- or negative-pressure fabric filters or multiple-stack ESP's the option of performing Method 9 observations daily in lieu of installing COMS's.

2.6.12 Comment: One regional air pollution control agency and two State agencies (IV-D-8; IV-D-14; IV-D-15) agree with the requirements to install COMS's and to report excess emissions quarterly. Based on one commenter's experience with two plants that are required to install, operate, and maintain COMS's, the commenter supports the requirement for sources to

monitor opacity. Monitors at the two plants have been installed for some time and, with minimal maintenance, have performed well as shown by audits performed by the State. The commenters do not favor the option to allow certified observers to determine the opacity of visible emissions from control devices with multiple stacks. Observer bias, poor visible emission reading conditions, lack of night readings, and only three readings per day preclude accurate data on continuous compliance. At the same time, a COMS is more reliable and continually operates under all conditions such as at night and during inclement weather when visible emission observations are impractical or impossible.

Multiple stacks and monovents can be vented into a single or small number of stacks, and, then, an opacity monitor or monitors can be installed. Plants can circumvent the monitoring requirement as written by adding a small vent or stack. Other sources with multiple stacks such as power plants (two or three stacks) are required to install monitors on the multiple stacks. In addition, because the monitoring results are likely to be used for some type of enforcement action, the commenter (IV-D-14) believes it would be unfair to require monitoring of only some of the new cement plants. A plant without a COMS would be less likely to be subject to enforcement action than a plant with a COMS.

Response: The EPA agrees that use of a well-operated and -maintained COMS is a better monitoring option than using certified observers to read opacity because the COMS operates continuously. However, EPA determined that the cost to install COMS's on multiple stacks was unreasonable. As a result of comments received since proposal of the amendments, EPA has reevaluated its position on multiple-stack fabric filters and ESP's. The EPA believes that there may be situations where control devices with multiple stacks are economically and environmentally superior to control devices with single stacks. As stated in Comment 2.6.11, multiple stacks can expedite rapid detection and correction of a malfunctioning section of the control device. In addition, because multiple-stack control devices generally have separate compartments each with its own fan, it is easier and less costly to isolate one section of the control device and replace a small fan, while still running the other sections of the control device than it is to shut down the entire control system and, thus, the process,

in order to replace a large fan on a single-stack unit. Therefore, EPA has decided to allow plants the option of using certified observers to determine the opacity of visible emissions from control devices with multiple stacks in lieu of installing COMS's.

Almost all portland cement plants installing fabric filters are expected to use negative-pressure fabric filters with single stacks. It is reported that less than 20 percent of the fabric filters installed in this industry since 1971 are the positive-pressure type. One kiln and one clinker cooler that have become subject to the NSPS since 1979 are controlled by positive-pressure fabric filters. In both cases, however, the fabric filters are vented to a single stack. One company in this industry is known to use negative-pressure fabric filters with multiple stacks at two of its plants that have become subject to the NSPS since 1979. One company is known to use multiple-stack electrostatic precipitators. Thus, for this industry, the use of the EPA Reference Method 9 alternative for new sources is expected to occur infrequently.

There is no clear incentive for plants to circumvent the monitoring requirements by adding a small vent or stack. To install another stack on an existing negative-pressure fabric filter would not be possible because of the extensive structural modifications of the existing fabric filter's internal components, ductwork, and fan that would be required to maintain an air-tight system. The cost to make these modifications would dwarf the cost to install, utilize, and maintain a COMS. Therefore, the monitoring requirement is not likely to be circumvented by the addition of a small vent or stack.

2.6.13 Comment: One commenter (IV-D-16) requests that his facility be allowed to comply with the proposed amendments by monitoring visible emissions in lieu of installing the more costly COMS's on its single-stack, negative-pressure fabric filter.

Response: The proposed regulation requires that plants install COMS's on kiln and clinker cooler control device stacks. The EPA has determined the costs of COMS's to be reasonable. Therefore, the only exceptions are for plants with multiple-stack, positive-pressure or negative-pressure fabric filters or multiple-stack ESP's.

2.6.14 Comment: The commenter (IV-F-1) asked that EPA verify the means by which its staff can become certified. "Smoke schools" for certifying visible emission observers are becoming harder to find. According to the commenter, California has some budget problems and does not like to conduct classes. This company has certified smoke readers in all three of its plants, and the commenter stated that it was getting difficult to find a school to train his people.

Response: Several States were contacted to obtain information on how often "smoke schools" are offered for certifying visible emissions observers (Docket Items IV-E-1, 2, 3, 4, 5, and 8). In Colorado, the smoke school is offered at least four times a year. In California, recertification classes are held monthly in Sacramento, and the class is held quarterly for 3 days at different locations around the State. In Missouri, smoke school certification is held every 6 months. In Oklahoma, smoke school is held in two different areas every 6 months. In Washington, smoke school is held every other Friday, if the weather permits. Based on this sample information, EPA believes sufficient opportunities are available for plant staff to become certified visible emissions observers.

2.7 REPORTING AND RECORDKEEPING

2.7.1 Comment: Several commenters (IV-F-1; IV-D-18) do not believe additional, costly recordkeeping of either opacity monitoring data or visual emission data is needed. One commenter states that reporting requirements will be a burden to the portland cement industry and will not contribute significantly to attaining the goals of the Clean Air Act. Recordkeeping does not affect emissions and merely adds an additional financial burden to portland cement companies that have spent "millions of dollars" on pollution control equipment. One commenter concludes that there is insufficient justification for the proposed requirements and requests that EPA reconsider the recordkeeping amendments and withdraw them.

Response: The Administrator has reevaluated the proposed recordkeeping and reporting requirements and has decided to withdraw the separate requirement for semiannual reports on the frequency, duration,

and cause of any incident or malfunction leading to bypass or deenergization of the kiln control device for sources using a COMS. Section 60.7(c) of the General Provisions requires that excess emission reports include the frequency, duration, cause, and corrective action taken for each period of excess emissions that occur during malfunctions. Therefore, the Administrator has determined that excess emission reports would provide an accurate record of periods of bypass or deenergization. If such periods did not cause excess emissions, a report on the incidents is not necessary. However, those sources not equipped with opacity monitors will be required to submit semiannual reports on the frequency, duration, and cause of any incident or malfunction leading to bypass or deenergization of the kiln control device.

In addition to this change, the Administrator has reevaluated the required frequency of reporting COMS excess emission data. Under NSPS, reporting frequencies of data, other than direct compliance information are reviewed on a case-by-case basis, and semiannual reporting of these data is required unless evidence is produced that supports more frequent reporting (50 FR 46467, November 8, 1985). Therefore, the regulation has been revised to require semiannual reporting of COMS excess emission data.

The Administrator has determined that the recordkeeping and reporting requirements associated with Method 9 observations and with the use of COMS's that are being promulgated by publication of this notice are essential for effective enforcement and will not impose an excessive burden on the industry. A maximum of 0.1 person per year at a cost of approximately $7,200 per affected facility (based on $30.45/h, which includes labor and overhead) will be necessary to comply with the recordkeeping and reporting requirements described herein. (Docket Item IV-H-2). This cost represents a worst case situation because it assumes that two excess emission periods will be recorded and reported annually for an affected facility, and this case would not be typical.

2.7.2 Comment: Two commenters (IV-D-11; IV-D-12) referred to the statement in the preamble that 41.6 person-years per year will be required by industry to maintain records and to collect, prepare, and use the reports. One commenter (IV-D-11) objects to the additional personnel

requirements that will be necessary to comply with the proposed amendments because portland cement companies are making personnel reductions and instituting cash conservation programs. One commenter (IV-F-1) reports that one plant presently estimates that its annual cost to report COMS compliance to the State is about $20,000, which the commenter considers a lot of money. Another commenter (IV-D-12) estimates that this would result in an annual cost to the industry of $1.83 million. This assumes that the work is performed by persons earning $44,000 per year in salary and benefits (41.6x$44,000=$1.83 million). The commenter states that this money could be spent on more important needs in the cement industry.

Response: As stated in the previous response, the recordkeeping and reporting requirements have been reduced. A recalculation of the burden hours associated with these requirements indicates that approximately 21 person-years per year will be required by industry to maintain records and to collect, prepare, and use the reports. The Agency also considers the $20,000 spent by one plant to report COMS compliance to be excessive and unusual. The responses to EPA information requests discussed earlier indicated that quarterly COMS compliance reporting ranged in cost from $300 to $1,500 annually. Using the 21 person-years per year estimated by EPA and salary and benefits of $30.45 per hour, the industry wide cost would be approximately $1,329,000, which the Agency considers reasonable given the information obtained from these reports.

2.7.3 Comment: Several commenters (IV-F-1; IV-D-1; IV-D-15) noted that the proposed recordkeeping and reporting requirements appear to be redundant. One commenter stated that the proposed requirements apply to the same upset/breakdown information required by State and local agencies. If the information is to be used for a data base or other purposes, one commenter recommended that EPA obtain the information from the appropriate State and local agencies and not by placing an additional burden on the portland cement industry. One commenter believes the requirement to submit semiannual reports of the bypass or deenergization of emission control devices on kilns is redundant because EPA requires quarterly reports of excess emissions. Another commenter believes that the requirement to submit semiannual reports of control device bypass incidents is less stringent and redundant when compared to existing upset

reporting requirements. Thus, semiannual reports would be unreasonable, unnecessary, and an unwarranted burden on the industry.

Response: As stated in the response to Comment 2.7.1., EPA has reevaluated its position on semiannual malfunction reports and has decided to delete the separate requirement for semiannual reports on the frequency, duration, and cause of any incident leading to bypass or deenergization of the kiln control device. The regulation has been revised to require that this information be obtained from the excess emission reports. If existing upset reports required by State or local agencies duplicate information required by the standard, a copy of the report submitted to the State or local agency can be provided to the Administrator in lieu of the report required by the standard.

2.7.4 Comment: One commenter (IV-F-1) states that it would appear to be a waste of time and resources for EPA to collect, store, and analyze all the additional data it has proposed to require because the data would probably never be used. The EPA's resources could be better spent. A commenter (IV-F-1) questioned what EPA will do with information gathered by the additional reporting requirements. The commenter has contributed data (compliance tests) for AP-42, which has not been revised yet.

Response: Excess emission reports for COMS's are required under the General Provisions [Section 60.7(c)]. These reports are necessary to enable EPA to identify plants that may not be in compliance with the standard. Based on report information, the Agency can decide how many plant inspections will be needed, which plants should be inspected, what records and processes should be inspected at each plant, and whether a compliance test is warranted. The records that plants maintain would indicate whether plants are properly operating and maintaining control equipment. Information on malfunctions leading to bypass or deenergization of the control device (contained in the excess emission reports) will be used to assess design, operating, and maintenance practices that minimize CO trips and to provide a data base by which to evaluate the issue in the next 4-year review.

As a part of this 4-year review, EPA has reviewed and analyzed the compliance test data on plants subject to the NSPS. These data were used in developing the revised regulation and were used in updating the AP-42

section on portland cement plants. The revised AP-42 section will be sent to owners and operators of portland cement plants for their review and comment before it is finalized.

2.7.5 Comment: The commenter (IV-F-1; IV-D-11) states that the only purpose of this rulemaking is to collect information for enforcement purposes and to address the question of CO trips. All this information will be gathered at the expense of the portland cement industry. Since EPA concedes that CO trips will be dealt with on a case-by-case basis and because emissions during CO trips are not considered representative for the purpose of demonstrating compliance, the commenter questions the need for monitoring or observations and the associated recordkeeping and reporting requirements. The commenter requested that EPA withdraw the amendments as proposed.

Response: The need for monitoring, either by a COMS or visual observations, and the associated revised recordkeeping and reporting requirements have been discussed in previous responses.

It is true that one purpose of the proposed rulemaking is to obtain information regarding CO trips so that this issue can be addressed during the next 4-year review and to enable enforcement personnel to evaluate the need to take action. During the last 4-year review, the deenergization of ESP's during periods of increased combustibles in the kiln exhaust gases was examined. It was learned that annual, uncontrolled, particulate matter emissions are significant if the ESP is deenergized frequently or for long periods. However, ESP vendors and plant personnel state that, if a kiln is properly designed, operated, and maintained, deenergization of the ESP will be infrequent. As stated previously, EPA has decided to withdraw the separate proposed requirement for owners or operators to submit semiannual reports on the frequency, duration, and cause of malfunctions leading to the bypass or deenergization of the kiln control device. The EPA has determined that this information can be obtained from the excess emission reports, which will be submitted under 40 CFR 60.7(c).

2.7.6 Comment: Two regional air pollution control agencies (IV-D-4; IV-D-8) support the amendment to require COMS's on all kilns and clinker coolers subject to the NSPS because of the potential for substantial particulate emissions from the portland cement industry. However, based

on extensive experience with portland cement plants, one commenter believes a 6-month period is too long a time before a company reports any downtime of its control device. The commenter believes that immediate reporting of downtime would be best but recognizes that the burden to industry might be too great. The commenter requests that EPA require at least monthly or quarterly reports of frequency, duration, and cause of any malfunction resulting in bypass or deenergization of any device controlling kiln emissions. The commenter also requests that these reports include the clinker cooler. Furthermore, the commenter believes that companies should be required to notify the enforcement authority verbally, as soon as possible, of all control device malfunctions. The commenter also approves of quarterly excess emission reports but believes it would be more appropriate to require monthly excess emission reports so that enforcement personnel may use the information in a more timely manner.

Another commenter requests that, for consistency, all reporting of excess emissions and process malfunctions be on a quarterly basis. This would simplify comparisons with data from other sources required to report quarterly.

Response: As stated previously, the Agency has determined that semiannual reports of excess emissions and bypass or deenergization incidents would be adequate. Therefore, the regulation is being revised to require each owner or operator required to install a COMS to submit a written report of this information semiannually. This would include malfunction information for clinker coolers also. However, it is not possible that a "CO-trip" malfunction resulting in deenergization of the control device would be reported for clinker coolers because conditions that might cause high levels of CO to be an explosion hazard cannot occur in clinker coolers. Reports of excess emissions as determined by Method 9 observation will also be submitted semiannually as required in the amended regulation.

If a State or local agency determines that more frequent reporting will enable enforcement personnel to monitor a plant more effectively, the State has the authority to require such reporting.

2.8 WORDING OF REGULATION

2.8.1 Comment: The commenter (IV-D-11) requests that the term "bypass" be defined if EPA promulgates final amendments. The commenter noted that this term is not defined in the preamble or in the proposed amendments.

Response: The following definition of "bypass" has been included in the amended regulation:

"Bypass" means any system that prevents all or a portion of the kiln or clinker cooler exhaust gases from entering the main control device and ducts the gases through a separate control device. This does not include emergency systems designed to duct exhaust gases directly to the atmosphere in the event of a malfunction of any control device controlling kiln or clinker cooler emissions.

"Bypass stack" means the stack that vents exhaust gases to the atmosphere from the bypass control device.